DEC Flood Hazard Area & River Corridor Protection Procedure
Public Comment Response Summary
December 5, 2014

The Vermont General Assembly passed Act 138 in 2012 requiring the Agency of Natural Resources (ANR) to adopt a Procedure:

- Outlining methods for assessing the sensitivity (i.e., stability) of rivers in the State; delineating river corridors based on sensitivity; and identifying where flood and fluvial erosion hazards pose a probable risk of harm to life, property, or public infrastructure;
- To aid and support the municipal adoption of river corridor, floodplain, and buffer bylaws; and
- Recommending best management practices for river corridors, floodplains, and buffers.

Consistent with the recently adopted Flood Hazard Area & River Corridor Rule, which regulates "development exempt from municipal regulation," the Flood Hazard Area and River Corridor Protection Procedure explains how the Department of Environmental Conservation (DEC) will utilize a "no adverse impact" (NAI) standard in making regulatory recommendations to Act 250, and other regulatory agencies. NAI is the standard ANR has applied since 2004 in making Act 250 recommendations under Criterion 1(D) for the NFIP floodway and the state river corridor.

The Procedures also explain how:

- Flood hazard areas, river corridor, and Act 250 floodways are delineated;
- Flood hazard area and river corridor maps are updated or revised by the Department;
- Waivers from the NAI standard are used to encourage land use planning for infill, redevelopment, and the shadowing of other structures; and
- Best practices may be used to promote stream and floodplain equilibrium conditions and the natural attenuation of flood sediments, heights, and velocities that influence flood inundation and fluvial erosion.

The draft procedure was released for public comment October 6, 2014. The Agency received comments from Two Rivers-Ottauquechee Regional Commission (TRORC), Southern Windsor County Regional Planning Commission (SWCRPC), Northwest Regional Planning Commission (NRPC), Lamoille County Planning Commission (LCPC), Windham Regional Commission (WRC), Northeastern Vermont Development Association (NVDA), Chittenden County Regional Planning Commission (CCRPC), Town of Cambridge, Town of Hyde Park, Town of Morristown, Town of Richmond, Town of Brattleboro, Town of Putney, the Johnson Company, Bear Creek Environmental, Stevens & Associates, and Milone and MacBroom.

Any party still unclear about the DEC's response to a comment or questions should feel free to contact the DEC River Corridor and Floodplain Protection Program for further clarification.

GENERAL QUESTIONS: POLICY, BACKGROUND, PROCESS

1) What's the process going forward after you receive comments on the Procedure draft? **(WRC)**

   Upon receipt of comments, DEC has updated and finalized the Procedure and prepared this summary to address questions and comments received. Now that the Procedure is finalized and signed by the Commissioner, DEC will implement the Procedure. In the coming months the River Corridor and Floodplain Protection Program will be scaling-up education and outreach efforts for stakeholders on how to work with the map update process and pursue local flood hazard area and river corridor protections utilizing the mapping data and model bylaws available through the Agency's web pages.

2) The Procedure identifies specific processes for municipalities that have adopted zoning and flood hazard regulations. However, it is unclear how the Procedure will apply to those municipalities that have not adopted zoning, flood hazard regulations, or both. The Procedure may place a disproportional burden on these communities. **(LCPC)**

   This Procedure and state flood hazard mapping do not place additional requirements on municipalities. The river corridor mapping will be used by the State to carry-out its responsibilities under Act 250 Criterion 1(D) and to regulate "development exempt from municipal regulation" (via the Flood Hazard Area & River Corridor Rule). If a project is not Act 250, Section 248, or exempt from municipal regulation then this Procedure and the river corridor maps are advisory only. The Procedure affects those towns that have not adopted zoning because Act 250 regulates development on one acre parcels in those towns (10 V.S.A. § 6001(3)(A)(ii)). Since this Procedure spells out how ANR will make determinations and recommendations under Criterion 1(D) of Act 250, the Procedure may affect a larger number of projects in those towns. However, this has been the case since 2003 because the Agency has been applying the current ANR Floodway Procedure which protects flood hazard areas and river corridors under Act 250 in those towns without zoning.

3) It is very difficult to fully grasp the procedure and its effects in the absence of the corridor maps. Regional Commissions, towns, and other stakeholders should be given ample time to review the maps once they are released. We suggest a minimum of 90 days. **(WRC)** It is irresponsible and almost deceptive to issue a draft for comment without issuing an accompanying map. You will be changing the cultural landscape and the citizens of our area have no clue. **Stevens & Associates** We would like to state again, that it is challenging to review this procedure in its entirety without having the river corridor maps to review alongside this. It is our opinion that it is not prudent to move forward with adoption of this procedure before the maps are complete. **(CCRPC)**

   First, it should be noted that a Procedure for mapping river corridor protection areas and implementing those maps to carry-out the Agency's responsibilities under Act 250 Criterion 1(D) has been in place since 2003 as an outcome of the Vermont Supreme Court decision recognizing the Secretary's authority to base floodway determinations on the science of flood and fluvi-

al erosion hazards. A Technical Guide on the development of geomorphic-based corridors (to support the 2003 Procedure and explaining the mapping process nearly identical to that outlined in this Procedure) has been in use since 2009. In 2010, 2012, and 2013 the Vermont General Assembly passed legislation which explicitly directed the Agency to develop river corridor maps based on geomorphic sensitivity (meander belts) and riparian buffers. While the Agency will use the Statewide River Corridor Map Layer, along with other land use layers and field-generated river data, to carry out its regulatory responsibilities; the Procedure and the Statewide Map **do not** increase the Agency's authority, change municipal obligations, or alter local land use regulations.

The General Assembly has required the Agency to consult municipalities and regional planning agencies in the development of river corridor maps, and the release of this Base Map and the Statewide River Corridor Map Layer is intended to start what will be an open and on-going map update process intended to support local, regional, and state flood resiliency and hazard mitigation planning. A new objective for the Procedure is to outline the ways in which municipal planning and zoning may advise and amend the Statewide River Corridor Map Layer.

There may be a perception that the 30-day comment period for the Base Map, as advertised in the draft Procedure, was a onetime offer. This is not the case. The Agency will welcome public comment and act on requests for updates of the Base Map and the Statewide River Corridor Map Layer on an ongoing basis. This initial public viewing of the Base Map is part of the Program's desire to post a more polished Map Layer and include minor updates offered to correct obvious line drawing errors from the computer mapping process before the Agency posts the Base Map as the initial Statewide River Corridor Map Layer on the ANR Natural Resource Atlas.

Another possible misperception is that the Agency, as a part of the initial map publication, was going to go beyond the sensitivity/buffer-based delineations required by statute and conduct all the updates and administrative revisions, outlined as options in the Procedure, in an attempt to better recognize the built environment. Were the Agency to carry-out this level of planning and mapping without local and regional participation, then these criticisms would surely be warranted. The Base Map does ***NOT*** yet include river corridor adjustments that may be made in the map update and administrative revision processes in the future, based on:

- New or existing Phase 2 stream geomorphic data (except for some natural valley wall data where readily available in digital form); including:
  a. Natural features like bedrock outcrops, alluvial fans, and extreme sensitivity ratings that would change the width or location of the meander belt;
  b. Slope stability allowances to include adjacent landslide areas and highly unstable side slopes;
  c. Natural or man-made depressions (unless they contain surface water and were highly visible on base ortho-photos);

- Administrative revisions made to minimize fluvial erosion hazards while facilitating local planning that promotes infill and redevelopment; including:

d. Modified stream types, where channel adjustments are human-constrained but the channel is vertically stable;
e. Designated centers or other existing concentrated development areas such as village centers; and
f. Existing local transportation or utility infrastructure.

The Department has created a River Corridors - Frequently Asked Questions page to explain what river corridors are, how they are determined, how they can be updated and why the State has delineated corridors as an important management zone for minimizing flood erosion hazards over time.

4) What is ANR's capacity to implement the procedure, what does this mean for towns and other stakeholders, and what role does ANR see for regional planning commissions in assisting towns with procedure implementation? Regional Planning Commissions do not have a dedicated funding source related to ANR program implementation. What resources we do have come from our performance contract with the Agency of Commerce and Community Development which supports a wide array of statutory responsibilities and town priorities. **(RPC)**

Since like procedures have already been in place and the Program now has a two person mapping center, DEC anticipates having the capacity to implement the Procedure. DEC continues to work with its partner agencies to redirect and seek additional funding to support RPC involvement which is viewed as critically important to the success of the local floodplain and river corridor protections.

5) Reducing damages caused by flooding and streambank erosion is laudable and a goal for many Lamoille County communities. However, the Procedure, as drafted, is more stringent than current flood hazard area regulations and permitting, and may inhibit future adaptive reuse of historic village center structures. Many of our communities were settled because of their proximity to water and now rely on those waterbodies for shelter, recreation, aesthetics, and economic opportunity. **(LCPC)**

The Procedure does increase protection in the flood hazard area outside of the FEMA-designated floodway by requiring compensatory storage for floodplain fills. Otherwise the protections are the same as have been applied since 2004 when the Agency began including river corridors as part of the Secretary's Act 250 floodway determinations. The new Procedure actually increase opportunities for adaptive reuse (i.e., infill and redevelopment) of lands within designated centers, including historic village centers as outlined in Sections addressing municipal map updates and administrative revisions.

6) As towns and villages, struggle with various FEMA flood issues, definitions, etc., it is very difficult for municipalities to keep current with federal and State policy, procedure, and rule changes that may impact municipal regulations, policies, procedures, and non-regulatory planning. For example, the Town of Cambridge is in the process of updating our Flood Hazard Regulations, which may be all for naught, if the DEC "procedures" are adopted and DEC recommenda-

tions to the District Commission are different from Cambridge's Regulations. Cambridge does not have zoning so many projects go through Act 250, which tends to be a more predictable permitting process. If projects are denied or altered to be cost prohibitive to property owners in Cambridge, this could be very detrimental to our community's ability to grow and thrive. **(Cambridge)**

Numerous pieces of legislation have been enacted in recent years impacting state policy, regulation, and procedure around flood hazard areas and river corridors, and DEC appreciates the challenge in keeping current.

This comment brings up a very important point - it has been the case for many years now that oftentimes the standards as applied through Act 250 exceed those adopted at the local level with respect to flood hazards. To be clear this Procedure lays out how the State will carry out its regulatory obligations under Act 250, Section 248, and the Flood Hazard Area & River Corridor Rule that regulates "development exempt from municipal regulation." It is important to note, if a municipality adopts more stringent bylaws or ordinances, then those will control (24 V.S.A. § 4413(c)).

The Procedure is not meant to be used as a proxy for a model bylaw. If Cambridge, or any other municipality, is interested in adopting standards that closely mirror this Procedure, the Program is happy to provide assistance to that effort.

Lastly, the State is also interested in a community's ability to grow and thrive in a manner that is safe and resilient. The standards laid out in the Procedure and applied through Act 250, Section 248, and the Flood Hazard Area & River Corridor Rule are structured to help ensure that a development does not increase flood hazards and is built in a way that enables a community to grow and thrive. Increased flood hazards coupled with repeated and ever-escalating flood losses are a growing factor precluding community resiliency.

7) Working closely with local legislative bodies prior to drafting this Procedure would have helped the Procedure be more palatable from the beginning. The historic Village of Cambridge, for example, is located almost entirely in the floodplain and its ability to rebuild after a major flood could be drastically impacted by the Rule and Procedure. More time to review the River Corridor Protection areas and maps would enable Cambridge to plan as a community for potential implementation of the Procedure and maps. **(Cambridge)**

The standards outlined in this Procedure have been used for over ten years in Vermont. The more stringent components of the NAI standard apply to the NFIP floodway and the river corridor and these are basically unchanged since 2003. What is new about this Procedure are the compensatory storage requirements for development outside the NFIP floodway but within the inundation flood hazard area and greater flexibility for infill, shadowing, and redevelopment within river corridors. The exceptions and river corridor adjustments allowed as potential revisions to the Statewide River Corridor Map Layer provide numerous opportunities for towns to work with RPCs, ACCD, and DEC to administratively craft a corridor that fits with the layout of a

town. The potential for a community to implement the Procedure and maps with a local flavor is much greater than was previously available under practice through the old Procedure and Technical Guidance. Prior to the publication of the Base Map and the development of the Base Map into a Statewide River Corridor Map Layer, the Department developed and used river corridors on a piecemeal basis (as needed for Act 250 development reviews) and used those maps with no prior notification of towns and RPCs. Adoption of this Procedure increases local and regional participation in the application of the Agency's Flood Hazard Area and River Corridor Procedure.

8) Flows eventually reaching a flood hazard area are sometimes restricted by substandard structures. These structures will gradually be enlarged for flood and fluvial reasons. Expanding site specific studies could also include at least a sub-watershed study, including identifying structures that could be impacted from the loss of upstream retention areas or increased downstream flows or volumes. If downstream owners (town, state, private) are potentially impacted, those downstream "stakeholders" are notified of that impact at the project's "preliminary design phase". This is similar to the notice ANR now provides to adjacent landowners when a well shield is proposed that crosses onto adjoining properties. The obvious question is - who takes on the cost of downstream upgrades? Can the upstream work be designed to reduce or eliminate the downstream risk? Will a town or state transportation project that is creating a downstream impact result in an increase to the grant priority for downstream improvements? Will landowners accelerate a repair or replace or complete temporary repairs until a larger fix is possible? Hyde Park Town's review of the new Route 15 Bridge (Hyde Park STP Culv (26)) resulted in the new bridge having a non-significant impact on our East Main Street Bridge. The Town spent $3,300 to evaluate potential downstream issues that should have been done at the state's preliminary design phase and paid for under the state bridge program. This "downstream impact" analysis would require an update to current VTrans rules or policies. VTrans confirmed for Hyde Park that there are no current rules or policies that would require engineering or hydrogeology studies downstream - only at the structure being upgraded. **(Hyde Park)**

The issues being raised within this comment are often addressed at the site level by the project proponent. Questions arise as to the responsibilities of different beneficiaries and whether they should contribute or take responsibility for what may be complex and expensive evaluation of impacts, both positive and negative. This tension between project-driven planning and more holistic, larger-scale, a priori planning is a reality. Due to the lack of funding to support the watershed scale evaluations of upstream and downstream effect, it is often the project proponent and other affected parties that individually bear the cost of evaluating the impacts. DEC supports local and regional hazard mitigation planning and sponsors river corridor planning that begins to identify cumulative impacts, mitigation projects, and the affected property owners within a river system. The Agency of Commerce and Community Development and VTrans are also conducting more and more community and system-level planning and project designs. Sections 4.0 and 5.0 of the Procedure support watershed scale evaluations of river sensitivity, involving other jurisdictions to the greatest extent possible.

9) The causes of flooding are dynamic and far reaching, and pinning the responsibility on landowners in the 'river corridor', without regard to their position on the watershed continuum, does all of us a disservice. I know you have all worked very hard on this. I get that you have invested great resources and spent lots of money. And I understand that you care deeply about Vermonters and the environment. I surmise that the policy will move forward as a result. I just don't think it represents a balanced and holistic approach to land use. **(Stevens & Associates)**

First, it should be remembered that there are only two jurisdictional areas that fall solely within the Agency purview: 1) regulation of "development exempt from municipal regulation" (i.e., state facilities, Section 248 facilities, and accepted agricultural and silvicultural practices) as directed by the Flood Hazard Area & River Corridor Rule; and 2) Act 250 Criterion 1(D) floodway determinations. While this Procedure explains how the Secretary will make recommendations to Act 250 Commissions on the management of flood hazard areas and river corridors to protect public safety, the District Commissions are not bound by those recommendations. Whether landowners are restricted by local land use bylaws or ordinances is separate from this Procedure and determined by duly elected municipal governing bodies.

Second, it is vital to the flood resiliency of Vermont that floodplain and stream equilibrium function be protected and restored wherever feasible from the top of a watershed to the bottom. The Procedure is replete with acknowledgement and opportunities to evaluate the effects of the existing built environment on stream stability and flood storage and then factor those effects into the assessment of stream sensitivity. The fact that Vermont has not completed this analysis for every stream mile, should not be an excuse for withholding the science and maps that attempt to inform the public about the range of flood and fluvial erosion risks they are exposed to and offering a starting place for mitigation of those risks.

10) Stakeholders cannot meaningfully interpret much of the draft text, verify the effect of the chosen methodology or establish the likely impact of the rule change without the accompanying proposed regulatory maps. Issuing the draft Procedure without the maps effectively invalidates the public comment process. **(Brattleboro)**

The response provided to Comment #3 explains the map update and administrative revision processes, that have now begun, in which ANR anticipates meaningful stakeholder involvement. The Base Map, that has just been published, does not yet include Phase 2 geomorphic or (municipal) built-environment data; this addresses the concern that ANR has gone forward with mapping decisions without public input. The Base Map is based on the past practice of applying the science.

Given ANR's history of applying the science of fluvial geomorphology to make river corridor delineations and the extensive peer review conducted over the past decade, the Agency did not anticipate that new science-based concerns would arise from formally presenting the details of the technical mapping process and requesting comments on a the draft Procedure. Nonetheless, the Agency determined that it was prudent to give the science and engineering community in Vermont an additional opportunity to give input on the technical aspects of the mapping

process before publishing the maps and finalizing the DEC Procedure. Once the public review process was completed and no issues arose that would change the scientific foundation used in Vermont to map river corridors, the Base Map was released. DEC offers the following background to help explain its past and future mapping Program.

A more simplistic description of the current meander belt-based corridor delineation was first outlined in DEC's 2003 Floodway Procedure. The ANR river corridor mapping process has become increasing detailed as a technique since 2004 with peer reviews being conducted over the past decade by EPA, USACE, FEMA, academia, and through journal publication. A more detailed process is now being formally explained in the Procedure.

Over 1,500 miles of river corridor maps have been published and used in every watershed and in every corner of the State over the past decade. The delineation of river corridors is not new. The Procedure primarily explains how the State will continue to build and update these maps. The only change in the mapping procedure is the addition of the riparian buffer component which has been added at the direction of the Legislature through Acts 110, 138, and 107.

The Program will develop an outreach and training program on how to complete map updates and assist municipal planning. The Base Map is a starting place, representing the basic (GIS-modelled) meander belt construction, which will be updated based on other technical analysis of additional stream stability and sensitivity data and/or administratively revised based on careful planning conducted through a collaborative state/regional/local process.

11) How long will Towns need to wait until "an open and on-going consultation process intended to support local, regional, and state flood resiliency and hazard mitigation planning" reaches them given existing staffing and other resource constraints? **(Brattleboro)**

Staffing issues always exist, but several points must be made regarding this process. By detailing a Procedure and developing training materials around the Procedure, the Department hopes to engage RPCs and other professional planners to help with the mapping process and thereby allow DEC staff to work with more municipalities at the same time. ANR has also engaged its sister Agencies in the river corridor planning process. The flood resiliency and mitigation planning carried out by VTrans, ACCD, and the Department of Emergency Management and Homeland Security (DEMHS) has become increasingly married with river corridor planning as the risks to transportation and utility infrastructure and other economic assets are examined in the context of river sensitivity. These collaborations have increasingly improved the State's capacity to respond to requests for municipalities assistance, which are encouraged by the ANR.

12) How will development applications be processed in the interim (assuming an "open, on-going consultation process"?) There is an inherent contradiction in seeking consultation with stakeholders *after* some set of regulatory maps using a new methodology are in force (even though the extent of that force remains unclear). This kind of process introduces even more uncertainty to the development process. It should also be noted that this effort at clarification coming on

the *last day* of public comment signals a poor understanding of why we have public comment. **(Brattleboro)**

DEC disagrees with the notions expressed in this comment. As explained above, the methodology is not new, and the Procedure makes it clear that DEC will consider and apply the Statewide River Corridor Map Layer along with other available land use data and detailed stream assessments in making Act 250 determinations and recommendations under Criterion 1(D). In other words, the Agency will always use best available data.

The "consultation" mentioned during the Procedure public comment period was in the context of river corridor planning, which will include map updates and revisions, and not in the context of floodway determinations. Once a project review begins the Agency does not seek stakeholder input in making a floodway determination, rather stakeholders may petition the Agency with new technical information that may support different corridor delineations. New administrative revisions will not be accepted in the middle of a project review. This has always been the process for Act 250 projects. The Procedure now details how the Program will accept new technical information and how municipalities and RPCs will be notified when updates are considered during project reviews. The Statewide River Corridor Map Layer, especially when it is comprised of only the ArcGIS Base Map, is a starting place for making the technical determinations required under Act 250. By having the Statewide River Corridor Map Layer to work with upfront, the developer will have a fairly good idea on how to plan.

13) Reading the Procedure in conjunction with the Preview of Transmittal there is a sense that DEC is reticent to set down new procedures and seeks buy-in from stakeholders over a period of time to work out *how* the new procedure will actually work; effectively initiating a meaningful engagement *after* the procedure has been adopted rather than before. **(Brattleboro)**

ANR has been utilizing similar procedures since 2004. The new Procedure has the objective of establishing the technical language associated with the No Adverse Impact Standard (as adopted by Rule) and to align the Procedure and the Rule. This aspect of the Procedure is being put into place by the Agency without delay, consistent with its responsibilities under Act 250. The Agency is NOT reticent about establishing the regulatory aspects of the Procedure. The Agency has the additional objective of establishing a collaborative river corridor planning process with local and regional entities. It is this aspect of the Procedure for which the Agency is keeping the door open to public input and willing to revise the Procedure in the near future and more often if it would be helpful to achieving the purposes of the Procedure.

14) The organization and content of the draft document compromises its intended purpose as a reference for permit application preparation, permit application review (by state, regional or municipal officials) or establishing grounds for intervener/interested person status in a permit proceeding. Others have commented on the poor organization, sub-standard graphical content, presence of both vague and overly-technical passages, incomplete and inadequate definitions and other issues that should be attended to through a rigorous editing process—we endorse these observations. The document should be written around the needs of the audiences identi-

fied here. Many sections are incomplete or go to unnecessary lengths to defend/explain concepts or methods of analysis that are effectively placed beyond argument now because the rule already stands. The reliance on the NFIP model language for document structure is perhaps understandable but regrettable. **(Brattleboro)**

The Program would welcome the opportunity at some point in the future to contract with a professional editor and publicist that would enhance the use of the document for other audiences. In the near term, however, the ANR Act 250 Procedure is being made consistent with the standards established in the Flood Hazard Area & River Corridor Rule. This process should not wait.

15) When considering how river corridors relate to ERAF, adoption of a 'functional equivalent' should be allowed. For example, if a community can develop a standard width that encompasses the river corridor protection area and applies the minimum regulatory standards, then that should be considered meeting the minimum requirements for reduced match/increased state share under ERAF. Some municipalities that could be reluctant to adopt river corridors due to the complexity of determining map boundaries may be willing to adopt a more straight forward approach. To the extent that it would be helpful to DEC RPCs can also play a role in helping with the distribution of the maps and communication with municipalities when they are released. **(NRPC)**

DEC will certainly look to partner with the RPCs in distributing maps and communicating with municipalities. ERAF is a separate state rule administered primarily by the Department of Emergency Management and Homeland Security (DEMHS) and therefore the Agency does not intend to spell out in this Procedure how decisions will be made in a rule that it does not solely administer. ANR will continue to discuss with DEMHS how a "functional equivalent" would be determined under the ERAF Program. The key test may be to demonstrate that the methodology adequately protects the meander belt of rivers and streams. A fixed setback generally does not work for larger streams since the banks move laterally as the stream adjusts over time. By contrast, the methodology to define the river corridor provides for the lateral movement of the stream over time as the river adjusts towards a more stable slope and geometry.

16) As far as I can tell you only reached out to government planning officials for 'public comment'. As I have said, it is not appropriate to solicit public comment on such regulation without producing an accompanying map. I also use the term 'solicit' loosely; it appears that publicity and outreach has been limited, to say the least. **(Stevens & Associates)**

As with our existing Act 250 floodway procedures and technical guidance, DEC is keenly aware that engineering and consulting firms will rely on the new Procedure in their work to support permitting under Act 250/Section 248. As such, the draft was distributed to 32 engineering and environmental consulting firms, including Stevens & Associates (cfrehsee@stevens-assoc.com and bstevens@stevens-assoc.com). In addition, the draft procedure went out to 29 NGOs.

It bears repeating, that this is not a regulation, but a procedure that further defines and refines how DEC conducts its business.

1.0 PURPOSE

17) As a general question, what is the primary purpose of the State River Corridor Map: to accurately depict flood hazard areas, or to serve as a regulatory document? All subsections under section 1.0 "Purpose" refers to regulatory processes except subsection (5). What other "programs, departments, and agencies" will receive recommendations? Will those recommendations be purely of a regulatory nature, or will the DEC be making recommendations for non-regulatory initiatives, such as hazard mitigation planning? If it's the latter, how will those recommendations account for administrative revisions that may have been made to the river corridor maps? **(NVDA)**

The purpose of the Statewide River Corridor Map Layer is to accurately delineate a zone for the management of rivers and floodplains to achieve least erosive, equilibrium conditions and minimize fluvial erosion hazards. The maps will serve as a reference in the ANR application of regulations including the Flood Hazard Area & River Corridor Rule and in the Secretary's determination of floodways under Criterion 1(D) in Act 250 and Section 248 proceedings. The maps will also serve as a starting place for Agency recommendations in other planning, natural resource management, and hazard mitigation programs. Land conservation would be an example of a non-regulatory program which may be informed by the statewide river corridor map layer. Other than the state Rule and Criterion 1(D) determinations, the maps and recommendations outlined in the Procedure may serve as advisory to other programs and jurisdictions. Where DEC has reviewed and participated in the development of administrative revisions and incorporated them into the Statewide River Corridor Map Layer, it will issue permits and make floodway determinations consistent with those revisions.

1(3) and 2(2) Floodways

18) These sections use "floodway" in a manner to mean something other than what "floodway" is defined as under local flood regulations and the NFIP. The second section also includes "floodway fringe", a term not used in the NFIP. To avoid confusion it would be best to rename this term as something different altogether, or at least consistently refer to it as the "Act 250 floodway". **(TRORC)** We agree that Act 250 should not have a different definition for Floodway than FEMA. **(Morristown)**

Section 1(3) - For the purposes of Act 250, the floodway is not synonymous with the definition in the National Flood Insurance Program (NFIP). Under 10 V.S.A. § 6001(6) and as affirmed by the Vermont Supreme Court, the Secretary of Natural Resources determines what constitutes the "floodway" in Act 250 proceedings. As a result, ANR considers both inundation and erosion hazards when determining the floodway for Act 250. DEC agrees that this is confusing, but 10 V.S.A. §§ 6001(6) and 6086(a)(1)(D) explicitly use this term. Therefore, until such time that Act

250 is revised to include different terms, the Procedure needs to be consistent with the terms presently in statute. A footnote has been added to the procedure to make this distinction. DEC agrees that using the term "Act 250 floodway" should be used in the document whenever referring generally to Criterion 1(D) floodway determinations inclusive of both erosion and inundation hazards, and DEC has made the changes to the text where appropriate.

Section 2(2) – The term "flood fringe" is commonly used in the NFIP and is used frequently in FEMA Publication 480. The term "floodway fringe" is defined at 10 V.S.A. § 6001(7) and is explicitly referenced in Criterion 1(D). The Procedure includes a No Adverse Impact compensatory storage standard to the floodway fringe. DEC agrees that the Act 250 definitions and standards should be updated to be made current with the flood hazard area and river corridor definitions and standards in statute and rule, respectively. For the purposes of this procedure the Act 250 *floodway fringe* is synonymous with the *flood fringe*. The procedure has been updated accordingly.

19) The "Act 250 floodway" and other definitions reduce the amount of land available for development or agriculture. By having an Act 250 floodway and a FEMA-defined floodway, this causes confusion among the general public, developers, and future Act 250 applicants. Further, the Act 250 floodway greatly extends the District Environmental Commission's jurisdiction, which may not fully consider the municipality's future land use goals. LCPC encourages property owners to use FEMA approved floodproofing measures for new and existing development located in or adjacent to areas identified in this Procedure. **(LCPC)**

The "Act 250 floodway" does not limit agricultural land uses, unless those land uses include development in the regulatory floodway as defined by FEMA or fills that would result in a significant loss of storage in the flood fringe. The No Adverse Impact standards ensure that new proposals do not increase flood hazards for other property owners.

DEC agrees that having multiple floodway definitions lends itself to confusion, but DEC must adhere to the current statutory definitions. See the response to comment #18 (TRORC floodway response).

The District Commissions already have jurisdiction over the "Act 250 floodway" (10 V.S.A. § 6086(a)(1)(D)). Moreover, the Vermont Supreme court affirmed over a decade ago that the Secretary of Natural Resources determines what constitutes the floodway for Act 250 proceedings. The substantive changes to the "Act 250 floodway" and this Procedure include an additional 50' added to each side of the river meander belt to accommodate buffer function, as required by the Legislature, and requiring compensatory storage in the flood fringe.

1(a)(6) NFIP minimum standards

20) Best management practices and model bylaws will be very helpful as described in Section 1.0(a)(6). After seeing the significant flooding and erosion impacts from Tropical Storm Irene and the July 2014 event in Chester/Andover, encouraging municipalities to adopt bylaws that

exceed the NFIP minimum standards is important. However, it is also important to be responsive to communities that desire to adopt NFIP minimum standards. Please consider making it clear in the new model bylaws what flood provisions go beyond the minimum requirements. **(SWCRPC)**

The Department added a sentence in the BMP section as a reminder that municipalities may adopt the FEMA minimums, receive DEC assistance in doing so, and still be in compliance with the NFIP requirements.

2.0 STATUTORY AUTHORITY

2(3) Assisting Municipal Regulation

21) It is not clear if DEC has the authority to "confirm the delineation of flood hazard areas and river corridors protected in municipal bylaws" as these bylaws are locally administered. Typically, the local administrative officer is the arbiter of where a proposed development lies in relation to mapped areas. Certainly, many local officials would appreciate comments on their determinations, and may seek guidance when unclear, but "provide advice on" would be a better term**.** **(TRORC)**

The language recommended by this comment has been used to replace language that was in the Draft Procedure.

22) Section 2.0(3) should also include structures that have sustained substantial damage. **(SWCRPC)**

By definition, repairs to substantially damaged structures are substantial improvements, but that is often overlooked. The DEC has added a footnote in this section for clarification.

23) On Page 4 under #3 Municipal Land Use Regulation - Minor comment - This is probably something we all grapple with. It says referrals to ANR to review permits which are only for "new construction and substantial improvements". The definition of new construction references structures (walled and roofed) so for example ANR doesn't want to review any other forms of development such as Joe Smiths permit application for a ton of fill for a major earth berm, construction of a bridge, digging a swimming pond or mining or excavating in the floodplain? **(Richmond)**

The reference is consistent with mandatory provisions in 24 V.S.A. § 4424(a)(2)(D)(i). If a municipality wants to refer all hazard area development proposals to ANR for review and comment, the municipality may do so. Given the potential for other development, such as large fill proposals, to have a significant impact, DEC encourages towns to structure the referral language in their local bylaws to include larger non-structural developments. The intent of municipal permit reviews is to assist the town in administering its local bylaw and remaining compliant with the NFIP.

2(4) BMPs: Assisting Municipalities with Model Bylaws

24) While we have specific details of concern with model bylaws, we heartily endorse never using the base NFIP protection standards as they are generally creating a public hazard in our riverine areas. However, since they are the legally allowable standards, perhaps the models could show both the minimum and preferred language with a note as to why there have been upgrades made. **(TRORC)**

Language was added to Sections 2.0 and 8.0 recognizing the NFIP minimum and to characterize the DEC models as recommended best practice.

25) "River corridor" and "River corridor protection" here appear to be consistent with the provided definitions (narrowly focused on geomorphology and hazard). Yet in section 8.0 (a) non-hazard ecological aspects of 'best management practices' are identified as part of river corridor planning and management. For consistency sake 2.0 (4) Additional Authorities for the Procedure which references "best management practices" should include reference to the broader Agency goals (and authorities) of Ecosystem Restoration (which has among its objectives meeting the requirements of the Clean Water Act). See below for missed opportunities in highly developed watersheds. **(Brattleboro)**

The Procedure includes best management practices for managing Vermont streams and rivers toward a dynamic equilibrium, i.e., geomorphic forms and fluvial processes which result in least erosive stream channels and functioning floodplains. The fact that this objective also helps the State meet its ecosystem restoration and protection objectives is pointed out as an additional benefit of the BMPs. The BMP Section is not intended to cover the full range of practices that may be important to achieving full stream ecosystem integrity, but attempts to reference other state plans that do have a this broader objective.

3.0 INTRODUCTION

26) This section should be rewritten and focus on how to use the document, reference supporting documents and other resources. **(Brattleboro)**

Some clarifying edits and changes were made to this Section. As the purpose of the Procedure is explain Department practice, the Section was not rewritten as a user's guide for other audiences. A user's guide that expands on how the Procedure may be used in municipal planning would be very useful. The State Flood Ready web page (http://floodready.vermont.gov/) has been created with this purpose in mind and will be a repository for other municipal guides as they are produced in the future.

27) First paragraph: Should the word "and" be used before "culverts" instead of "such as." And consider 'stress' instead of 'tax' later in the sentence. **(NRPC)**

The suggested edits have been made to the text of the Procedure.

28) We suggest adding "and flood insurance studies" after "NFIP maps". **(TRORC)**

The recommended language was added to the Procedure.

29) We are not aware that the Agency actually does "flood hazard area" mapping. **(TRORC)**

The ANR does not conduct the technical flood hazard area mapping. The distinction between FEMA mapping and ANR mapping processes was clarified in the Procedure.

4.0 DEFINING AND MAPPING FLOOD HAZARD AREAS AND RIVER CORRIDORS

30) This section should be relocated to the appendices and be rewritten. As written most of page seven and eight is devoted to a description of existing conditions and a defense of the methodology—it can be deleted. It would be better if this appendix focused on the method for delineating the features of the River Corridor (i.e. Meander Belt, Riparian Buffer etc., for reference see Alexander and Healey, Mapping River Corridors to Inform Flood Resilience Efforts in VT). This section does not adequately address the occurrence of natural ledge and its interaction with channels. **(Brattleboro)**

A reference to ledge has been added. Since all aspects of the river corridor development process have not been carried out for every stream and river reach for which a base map has been delineated, it is important that the full meander belt and buffer extension process be in the Procedure as some aspects may be carried out by DEC during the Project Review process if they are not as yet reflected on the Statewide River Corridor Map Layer.

4(a)(1) Availability and Terminology of Flood Hazard Maps

31) It should be noted that maps are also available at regional planning commissions (RPCs). **(TRORC)**

The recommended language change was made to the Procedure.

32) Page 6, Section 4, subsection (a)(1). I would mention the terms "floodway" and "flood fringe" here to link the concept to the terms "flood hazard area" and "FIRM." **(NRPC)**

The DEC agrees and the text in this Section has been updated.

4(a)(2) Terminology and Definition of River Corridors

33) The term "river corridor" is used and then referenced in regards to "streams" throughout the document. Even the defined term "river corridor" only references "rivers." As planners, we understand that "river" and "stream" are interchangeable terms, but a lay person or another government official may not. Care should be taken to say "river and stream" instead of just "river"

or “stream,” or it should at least be clarified that they are comparable in the definitions or within the actual text. **(NRPC)**

A paragraph was added as a footnote in this Section to explain the use of the terms stream and river in the context of river corridor management.

34) “SGA” should be spelled out the first time it’s used on page 7. **(NRPC)**

The suggested edit was made to the text in this Section of the Procedure.

35) This section describes the optimal situation well, but does not cover managed streams, such as downstream from flood control dams, or in heavily armored sections, both of which are applicable in some areas, such as the Winooski in Montpelier. Although the procedure later covers some of these situations, we suggest acknowledging in this section that river corridors in many situations are managed or constrained in ways that are expected to be maintained. Perhaps the draft could note here that such areas exist and are covered under 4.0 (b)(5). **(TRORC)**

The DEC has added a phrase to the beginning of this Section to recognize the delineation of corridors around modified streams.

36) The first reference to equilibrium may want to include a broader definition such as in the Vermont Standard River Management Principles and Practices. **(Milone and MacBroom)**

- For channels in equilibrium, human activity cannot initiate vertical movement of the channel at the reach scale that would create a departure from equilibrium.
- For channels out of equilibrium, human activity cannot cause further departure in the dimensions and profile associated with its equilibrium form and its natural stream processes.
- For channels out of equilibrium, human activity cannot block the return of the predicted equilibrium state preventing future attainment of the most stable channel (unless defined as an emergency measure required to address a threat to life, public health, and safety or address the threat of severe damage to an improved property).

Language was added to this Section to make the connection to the performance standards in the Stream Alteration Rule and the Standard River Management Principles and Practices.

4(a)(3) Meander Belt Component

37) This diagram could benefit by also showing how the belt width is greater than the existing meander in a straightened reach. **(TRORC)**

This Figure was <u>not</u> changed as recommended because it would make the Figure too complicated. Such a figure will be developed and added to the River Corridor FAQ document.

38) The science behind the ‘River Corridor’ makes a lot of sense from a geologic point of view, but fails to incorporate the facts on the ground. The geologic meander belt, or 6 river widths does

not adequately consider existing infrastructure that has been built through the years. The dissipation of energy and dispersing of sediment of a naturally functioning river would be terrific, but since most streams and rivers in our area are crisscrossed with bridges, bordered by roads and highways and armored to protect valuable assets, there is little chance that the meandering nature will ever be restored. In fact, this policy, using TS Irene as a sales pitch, misses the point that it is actually the widespread use of narrow spans and undersized culverts that caused much of the widespread damage, not the construction of homes and business in the 'river corridor'. In basic terms you have the river corridor defined by the meander belt. It appears that the meander belt is 6 river widths regardless of the underlying geology, grade, channel structure, volume or velocity of the stream/river. I think this is a gross generalization and does not reflect actual conditions on the ground. **(Stevens & Associates)**

The river corridor identifies the minimum lateral space necessary for the river to adjust its slope to become vertically stable and least erosive. From a planning perspective, the river corridor is a powerful tool for identifying, evaluating, understanding, and mitigating at-risk investments including steam crossing structures.

The Department disagrees with the comment that homes and businesses within the river corridor do not contribute to erosion hazards. It is a well understood fact in Vermont that once an investment is placed within the river corridor, channelization of the river is conducted to protect that investment, most commonly in the form of streambank armoring. We have collected and analyzed over 1700 miles of detailed geomorphic assessment data confirming the degraded condition our rivers and the degree of channelization that exists. Moreover, DEC River Management Engineers make hundreds of authorizations a year for property owners to protect their investments. Armoring streambanks to protect investments such as businesses and homes further energizes and destabilizes the fluvial system putting pre-existing investments, including stream crossing structures at risk.

The Department understands that channelization practices will continue given the degree of investment existing in river corridors. However, it is the policy of the State to not make the problem worse.

39) What happens when we curtail a meander, channel the stream or direct it through a fixed outlet? The stream and its meander pattern change, right? How does the definition of the River Corridor change with such impediments? To put the problem of defining the altered river corridor on land owners is unfair; that should be your job. Please produce a River Corridor Map that shows the reality of the situation on, not a hypothetical, natural-state conditions. Further, if you look at a local example like the Whetstone Brook, nearly every reach of the brook is defined by an impediment to the meander belt; roads, bridges, houses, businesses, ledges, stabilized embankments, etc.. How could the natural geomorphology ever be replicated or its function restored? I believe your expectations of protecting river corridor functions are too high. Basically, if we are going to force the river through a bridge or culvert every 1/2mile or so and accommodate a state highway and existing settlement, I don't think it's appropriate to expect a 6 stream width river corridor to perform its intended function. It seems as though you will be asking only

a select few properties to perform the functions of an entire meander belt. **(Stevens & Associates)**

It is the policy of the State to protect the full river corridor where-ever possible and define river sensitivity and river corridors to the benefit of local communities and the state. These objectives benefit landowners upstream and downstream. When a development proposal is made the ANR will consider the statewide river corridor map layer and any other stream geomorphic data that may result in changes to the corridor as delineated for the reach in question. The ANR will examine on-the-ground facts as a part of its project review and make technical river corridor adjustments as justified by field data, i.e., the burden will not fall solely upon the landowner. The Procedure sets up a process where any party may bring new data to the attention of the DEC River Scientist. Where a developer wishes to conduct field studies to proposed major map amendments that would contract the river corridor (potentially having an adverse impact on the safety and property of others, the cost of that analysis will be borne by the developer.

Stream crossings do not change the definition of the river corridor. The lateral space needed by the river over time to be vertically stable and least erosive does not change. Stream crossing structures can be sized to be geomorphically compatible. Rivers outflank and destroy undersized crossing structures frequently. River corridors should not be modified based on a false presumption that crossing structures represent fixed points in the meander geometry of a stream.

DEC is not suggesting that we will attain an equilibrium channel slope and geometry through our built environment, which is why there are numerous exceptions provided in the Procedure in designated centers and built-out areas. The goal is to protect and restore undeveloped river corridors up and downstream of our built environment. Also, as described by the Procedure, meander belts are based on river sensitivity and may be less than or greater than six channel widths.

More information on river corridors may be found here: http://floodready.vermont.gov/RCFAQ

4(a)(4) Riparian Buffer Component

40) Why are 50' riparian buffers shown on your state-wide map not included on River Corridor Protection Maps? (Comment: I believe riparian buffers should be shown; municipal regulations could include or exclude them.). **(Putney)**

The Statewide River Corridor Map Layer will be on the ANR Natural Resource Atlas and they include the 50 foot buffer component. River Corridor Protection Area Maps are also available to municipalities and they do not include the buffer component. The ANR will promote the municipal adoption of the full river corridor.

41) We are pleased to know that adoption of this buffer will be optional, and is not required for ERAF compliance. This will allow local adoption in areas where it makes the most sense. Page 13, 4(c)(4) allows for municipalities to request maps showing only the river corridor protection area. Does that mean the statewide river corridor map layer (5(c)(1)(A) will also change upon this request? **(NRPC)**

The Statewide River Corridor Map Layer as posted on the ANR Natural Resource Atlas will always include the riparian buffer component. ANR will apply the Flood Hazard Area & River Corridor Rule to the full river corridor as directed in Acts 138 and 107, and will also use the full river corridor in making Criterion 1(D) determinations and recommendations under Act 250 and Section 248.

42) Why are 50 foot riparian buffers shown on your Statewide River Corridor Map not included in the River Corridor Protection Maps for Municipalities? Comment: I believe 50 foot riparian buffers should be shown on River Corridor Protection Maps also; municipal regulations could include or exclude them from protection. **(Putney)**

Towns are not limited to adopting the River Corridor Protection Area Maps. Municipalities may adopt and are encouraged to adopt the river corridor maps that include the 50 foot buffer extensions to the meander belt. The section describing the state delivery of River Corridor Protection Area Maps has been moved to the section on map revisions which describes how the State will work with RPCs and municipalities to review and revise different available map types.

43) The 50 foot buffer width on either side of the meander belt appears to be an arbitrary and capricious distance not documented in the procedure by scientific evidence or references; and in all likelihood representing a taking of property uses without just compensation. Detailed technical support for a "buffer width" is needed in the document for a variety of types and sizes of streams and rivers. The width of the buffer needed to achieve the goals of the legislation should likely vary, depending upon the substrate soils (rock, gravel, sand, clay, etc.), design flow stage and velocity as compared with side-slopes and soil erosion potential, and other factors. Issues not related to the referenced legislation should not be included as a rationale for increased buffers (e.g. unless the legislation references "cold water fisheries" shade is not applicable as a rationale for a stream-side buffer in this procedure). **(Maynard-Johnson)**

The explicit purposes of the buffer component and references to the scientific literature have been added to the Procedure. The Procedure also makes clear that 50 feet, while supported in the literature as necessary to minimize streambank erosion and reduce flood velocities in the near bank region, is a distance adopted for the purposes of administering ANR's responsibilities under Act 250 and Section 248, and project proponents or other parties may submit site-specific data (as listed in this comment) supporting a different value.

4(b) Delineating River Corridors

44) Where is the document that explains the specific procedures for developing the State-wide corridor? **Bear Creek Environmental, LLC**

Metadata is available and a new technical presentation is under-development laying out the process used in ArcGIS to develop the Statewide River Corridor Map Layer. This information will be available on the Program and Flood Ready web pages.

45) To highlight the risk of flood damage to transportation and public utility infrastructure, human-made constraint boundaries should be shown on river corridor maps. For municipalities, property owners, and state agencies who own and maintain this infrastructure, it is important to understand where roads and other investments are located relative to vulnerable areas. High maintenance costs to maintain this infrastructure with sustained, repeated damages over time may factor into capital planning and mitigation planning to move roads out of harm's way where possible. **(LCPC)**

The Department agrees with this sentiment. Language has been added to support the fact that infrastructure and other improvements directly abutting a river corridor (in particular the meander belt component) are as, or more, vulnerable to fluvial erosion hazards as those structures within the corridor. It was also made clear that alternatives, including the relocation of abutting infrastructure, should be considered by the owners of this infrastructure.

46) A "river corridor" is defined as the land adjacent to a river (or stream greater than 2 square miles) that is needed to accommodate the natural movement of the river. The river corridor protection area includes the river and the area subject to fluvial erosion (the meander belt of the river), but excluding a riparian buffer. **(LCPC)**

> However, the boundary of the river corridor meander belt is adjusted based on existing infrastructure. For example, if a road runs parallel to a river and is included in the river corridor, the width of the belt is truncated by the road. Staff is concerned that this conveys the message that the infrastructure excluded from the corridor is not vulnerable to damage from flooding and erosion. Instead, the corridor that is defined using the stream condition and the number of channel widths that would naturally be required to maintain equilibrium should be used as the river corridor boundary, without making allowances for existing infrastructure.

Language has been added to several Sections to stress that ANR considers infrastructure and other structures abutting the meander belt to be as, or more, vulnerable to fluvial erosion. The explanation for shifting the corridor off state aid highways and railroads, in terms of managing and reducing fluvial erosion hazards over time has also been strengthened in the Procedure and added to the Program's published FAQ.

47) It should be noted that the 50-foot setback is "measured horizontally and perpendicularly". Also, we are not sure where alluvial fans should be in the document, but they do represent a hazardous location prone to flood damage. 5.0 (c)(3)(B)iii does allow for towns to request that they be added, but it is not clear if the Agency can put them on the original maps or later on their own motion. **(TRORC)**

The terms "horizontally" and "active alluvial fans" were added to the appropriate Sections.

48) Six channel widths seem small for extremely sensitive areas. How about considering 8-12 channel widths depending on the setting? **(Milone and MacBroom)**

Corridors will not be limited to six channel widths for high to extremely high sensitivity streams. While the Base Map begins at the 6X multiplier, the State may use an 8X or greater multiplier based on stream sensitivity data (See Section 4(b)(4)). The corridor may also be extended to include existing meander and deposition/erosion features.

49) In 4.0 (b)(6): The "may" in the last sentence creates confusion. Again, this should probably be a "shall". **(TRORC)**

The recommended language change was made to the Procedure.

50) Would (b)(7) "Natural or Manmade Depressions Adjacent to Streams" include the creation of compensatory floodplain? **(NVDA)**

No, restored or created features at or above a floodplain feature or the elevation of the annual flood would not fall under the category of features that might be considered as a rationale for extending a river corridor. The language in this section has been changed to clarify the elevation of features being considered. A definition of annual flood has been added to the definitions section.

51) Figure 3: The cross section denotation is confusing. If AL is a cross section it should be from point A to point L. Carrying the arrowed line all the way to the right is also confusing, and how AR is different from AL is not clear. **(TRORC)**

The labelling on this figure and the key for explaining the labelled cross-sections was completely remade to make it easier to interpret.

4(b)(5) Natural and Human-Imposed Confining Features

52) In the first paragraph, the draft notes in cases where the meander belt would be placed beyond the valley wall, it would be extended on the opposite side to compensate, but the draft does not say what would happen in situations where it extends beyond both valley walls, aside from saying it "may" be less. It is not clear why ambiguity remains. This section also does not appear to address natural ledge and its constraints on channels. **(TRORC)**

Clarifying edits were made to first paragraph of this Section to indicate that in some cases the meander belt may be bounded by valley toes on both sides, resulting in a narrower belt width. A phrase was added earlier in the Section to indicate that a valley boundary may be bedrock or exposed ledge.

53) A sentence in the second paragraph reads, "Note, maintaining structural alignments may require reestablishing channel dimensions in those locations." The meaning of this is unclear. Does it mean you have to blast the far valley wall? Later in this same paragraph, the draft goes on to say that previous constraints "may require an appropriate sizing . . ." Again, this is probably more accurately a "will" than a "may". Essentially, the draft is building a logic decision tree, but inserting "may" in places leaves the reader not knowing which way to turn. **(TRORC)**

The DEC made edits to clarify this section. The term "may" was deleted or replaced.

54) Regarding delineating river corridors and natural and human-imposed confining features – It seems like the state wants to re-draw fluvial erosion lines so Federal Aid Highways are not to be mapped within the erosion zones (even if they do fall within the erosion hazard area.) I'm curious why these specific road types are magically not to be included in a State wide erosion hazard corridor, and the potential implications for a local community? For example, many of us witness the flood related erosion which wiped out large sections of Route 107, Route 100 and Route 4 in Central Vermont. If there are major transportation routes which are susceptible to erosion, the state should acknowledge this and plan for the potential impacts and towns should be aware of this, as what if they've chosen these routes as evacuation routes. The last sentence of the second paragraph of (5) on page 10 does include a caveat but if these locations are vulnerable then they should be mapped as such**. (Richmond)**

There is a tension between mapping where fluvial erosion hazards exist today and establishing a zone to minimize fluvial erosion hazards in the future. The federal aid highways are set as a boundary for the meander belt because doing so increases the likelihood of protecting a meander belt away from the road, which would reduce flood depths and velocities against the public infrastructure and thereby reduce its vulnerability. This Procedures makes abundantly clear that infrastructure abutting a meander belt is as or more vulnerable than roadways within the corridor.

55) It is understood that certain features, whether man-made or natural, would act to prevent the meandering of a stream. However, the second paragraph under (5) "Natural or Human-Imposed Confining Features" (page 10) indicates that the river corridor delineation shall take into account roads, *with or without* embankments, and constraints that are established and "broadly accepted by society" *even though this infrastructure may be especially vulnerable to erosion hazards*. It is logical that historically developed areas within the River Corridor would be *regulated* differently than undeveloped areas, and this is addressed both in Section 5.0(c)(3) and 7.0(a)(2)(B). But if the *delineation* of the River Corridor does not reflect the actual erosion hazard, its usefulness is limited and it cannot provide an accurate basis for future decisions on

infrastructure investment. **(NVDA)** We would recommend showing engineered levees, railroads, and federal aid highways that are within the belt width corridor as fluvial erosion hazard zones, even in instances where the river corridor is extended laterally on the opposite side. It is acknowledged that "road infrastructure abutting river corridor boundaries may be especially vulnerable to such hazards". **(Bear Creek Environmental, LLC)**

This section was reworded to indicate that adjacency to the meander belt indicates vulnerability to present-day fluvial erosion hazards and can provide an accurate basis for hazard mitigation planning and infrastructure investment.

56) The third paragraph under subsection (5) "Natural or Human-Imposed Confining Features" indicates that the Secretary can only designate a "modified stream" if the river segment or reach is determined to be vertically stable. What happens if the development is constraining a river reach that *is* actively degrading or aggrading? **(NVDA)**

If the reach is actively aggrading or degrading then the modified stream type designation should not be applied, development constraining such a reach would be very vulnerable to erosion, and the corridor would not be narrowed on the basis of stream stability.

57) It may be worth mentioning that maintaining a river corridor at the edge of infrastructure will reduce flood velocity and erosion potential. (It engenders) process improvement in addition to avoidance. **(Milone and MacBroom)**

The DEC added language to the Procedure as suggested.

4(b)(8) Riparian Buffer Component

58) The diagram and description almost make it seem as though it does not matter if vegetation exists inside of the buffer component- is this the intent? What if there is already cleared area (such as ag use) or land development between the buffer area and the top of bank- will a new disconnected buffer area be required? **(NRPC)** If the channel is on the other side of a broad valley and the meander belt is wide, does it make sense to have a vegetated buffer since it may often land in the middle of an agriculture field? The buffer makes sense when the channel is in the area or on the same side of the valley. **(Milone and MacBroom)**

The 50 riparian buffer extensions on the meander belt is delineated for the purpose of providing an additional setback that will maintain an undeveloped space for a riparian vegetated buffer to exist when the meanders have extended to the full amplitude associated with stable equilibrium conditions. If this extension were not included and structures were placed at the very edge of the meander belt (a.k.a., river corridor protection area), a home or business owner would need to armor the river bank to protect the structure BEFORE the meander evolved to its equilibrium amplitude. With the additional setback provided by the riparian buffer component, structures may be placed just outside the river corridor and, as the river meander evolves in the direction of the structure, a space will be available to establish a woody buffer that will provide

resistance to the lateral erosion on the channel (potentially avoiding the ongoing expense of hard-armoring). In this case, if the landowner elects to armor the banks when the river reaches the edge of the meander belt, there would still be the space for a woody buffer that provides other flood mitigation benefits. This buffer component is considered as a functional setback area for the purpose of regulating "development exempt from municipal regulation" subject to the State Flood Hazard Area & River Corridor Rule, determining a floodway under Criterion 1(D), and recommending land use restrictions to Act 250 District Commissions under Criterion 1(D) and in Section 248 proceedings.

ANR recommends the establishment of a woody buffer on the top of stream banks as they currently exist. To any owner of a valued structure within or just outside the river corridor, ANR recommends that owners consider the value of woody vegetation for streambank stabilization and hazard mitigation and establish deeper rooted plants and trees as a bulwark between lateral river movements and their structures. Along rivers evolving back to equilibrium geometry, the buffer component of the corridor just outside the meander belt may be an ideal area to begin establishing trees that may mature to arrest the meander migration when it comes.

59) Figure 2: It is not clear if the wide green line is 50 feet and so is synonymous with the checked riparian buffer checked area at the outer edges of bends. This graphic also may be trying to cover too many variables in one graphic. In the final rule we suggest all graphics are professionally rendered. **(TRORC)**

The wide, green line in Figure 2 represents the current buffer area and the wide checked line represents the setback area to provide for a buffer when the stream reaches equilibrium. No changes were made to the Figure, however, because DEC does not want to imply that a buffer maintained off the existing bank lines should necessarily be the same width as the riparian buffer extension. If people want to maintain an existing buffer wider at a width other than 50 feet, the Procedure should not imply otherwise.

4(c)(4) River Corridor Protection Area Maps Provided to Municipalities

60) On page 13, is there a regulatory implication of the mapping option offered to towns in item (4) under (c) "Procedure for the Statewide River Corridor Map Layer?" **(NVDA)**

This sub-section has been moved to subsection 5(c)(4). The wording restates the statutory mandate that the Agency make River Corridor Protection Area maps available to towns. It is at the town's discretion whether to use or reference the RCPA maps in their flood hazard bylaws or ordinances.

61) "DEC shall, upon request, provide municipalities with maps depicting river corridor protection areas (10 V.S.A., Sec on 1422(19)." Who can request the map (Planning or Conservation Commission, town manager, selectboard, a town resident or non-profit?) **(Putney)**

Any member of the public may request and receive river corridor and river corridor protection area maps.

5.0 APPLICABILITY, AMENDMENT, UPDATE, AND REVISION OF MAPS

5(c)(1) Applicable River Corridor Maps

62) Can we assume that no adjustments for existing development patterns will have been made to the river corridor data when it's released, and that each community with a designated center in an affected area will have to request a revision? **(NVDA)**

Correct, the initial release of the Base Map does not include administrative revisions for existing development patterns (with the exception of state highways and railroads). The Procedure has been edited to explain that designated centers may be a part of revisions petitioned by municipalities, RPCs, ANR, ACCD, or other parties (but in consultation with municipalities) and it should be noted that even where the Statewide River Corridor Map Layer has not been administratively revised, there are several NAI exceptions listed where the ANR may consider existing concentrated development when consideration of an Act 250 or Section 248 development proposal.

63) All digital Statewide River Corridor Map files (and updates) should be provided to VCGI and Regional Planning Commissions. This will enable the use of the data layer. Practitioners will know to go to VCGI to check for updates. **(NRPC)**

The statewide river corridor data is maintained by the Agency of Natural Resources and will be available on the ANR Natural Resource Atlas. Through interagency cooperation all ANR data is also available to GIS users through the Vermont Center for Geographic Information's Open GeoData Portal.

5(c)(2) Map Updates

64) These sections cover "revisions" and then the next covers "amendments." This may be an attempt to mimic FEMA processes, and appear to have revisions be wider changes and amendments spot changes. However, unlike FEMA, the Agency actually has the capacity to update the digital map layer every time a change is made, be it for a site or a whole stream. Therefore, we suggest that these processes be combined. **(TRORC)** Consultation notwithstanding, the process outlined in the Preview of Transmittal, it appears that the formal FEMA style process is redundant here; the Agency can update the digital map layer as needed. These sections should be combined. **(Brattleboro)**

The DEC agrees with the sentiment expressed in these comments and has largely collapsed what were separate amendment and revision sections into a single section. The revised section includes "administrative revisions," which may be requested as a result of municipal planning,

and "updates," which are made primarily as a result of better geomorphic data to define natural constraints and river sensitivity.

65) Can new land development and transportation projects at both the state and town levels (along with private property owners) work together prior to the design stage? Many private developments will need to have a no net increase to off-site properties, but that depends on what the standard of review is - 25 yr, 50 yr, etc. The state and town road infrastructure will need to accommodate flows exceeding the design standard. **(Hyde Park)**

Yes, the update process now outlines how a developer may approach the DEC about both minor and major map updates. It is the annual flood that does the most work (over time), in terms of sediment erosion and deposition, and defines the bankfull channel width. Therefore, the standard for review, when considering *Watershed Hydrologic Modifications* that would influence channel and meander belt widths, is the annual flood. A definition for annual flood has been added to the procedure.

5.0(c)(3) Map Update Process

66) Nice revision and amendment processes. Will the Atlas have just the current map or older versions with updated sections? I could see this leading to a lot of requests and submissions. **(Milone and MacBroom)**

The Atlas will only show the river corridor as updated or revised. One will not be able to see where the changes were applied to the Base Map on the Atlas. The Agency does use an Edit Tool that saves and documents all updates.

67) The comment period on the Statewide River Corridor Map should be more than 30 days to enable municipalities to have sufficient review time. **(NRPC)**

Municipalities may continue to comment and request map updates after the initial 30 day posting, when the Base Map will be available on the Atlas. Requests for extensions of the comment period will be considered by the Agency.

68) The public comment period should be at least 30 days. **(Brattleboro)** On page 16 (c) (iii) application for map amendments 10 business days doesn't seem like long enough notification timeframe. Why not simply make it either 15 or 30 days (like local notice and appeal periods.) **(Richmond)** A 10 day appeal process seems too short for the circumstance described in subsection on (c)(4)(C)(iii) **(NRPC)**

The DEC agrees and has increased the notice period to 30 days.

69) Statute requires towns to post these maps. Will towns get new hard copy maps with each amendment of the river corridor? Some towns will not have the ability to use the ANR atlas. **(NRPC)**

YES, this is an important point. ANR will work with the RPCs to deliver maps in the most convenient manner to municipalities given their differing access to technology.

70) We suggest that the first sentence clarify that ANR may amend "on its own motion" the base layer. In the rest of the paragraph, it is not clear if the River Scientists may make only minor amendments, or that they can make both minor and major amendments. After the phrase "as they deem warranted" it should add "using this procedure". The last sentence in the paragraph about publishing the maps can be deleted as it is covered at the end of 5.0 (c)(4)(C)iv. **(TRORC)**

DEC has made changes to the Procedure as suggested.

71) "Amendment" outlines a process by which amendments to the maps can be made, based on SGA protocols. Although "amendments" are defined within the text, it is not clear how they are different from the "revisions" noted previously in section (2). Why do "revisions" require a 30 day public review period while amendments do not? Further, regarding the provision under (4)(c)(iii), it would seem that all property owners who are affected by an amendment – whether "favorably" or not – should be notified. Regardless of how an amendment (or revision) affects a property owner's land, that person should have the right to be heard. If someone disagrees with an amendment, they should be given a reasonable amount of time to hire an engineer, not just 10 days. **(NVDA)** Require applicants requesting an amendment or revision to VANR river corridor maps to provide notice to abutters or other affected properties and lengthen the public notice review period to 30 days, which would be more consistent with other Agency review processes. Further, 30 days would allow governing bodies and RPCs the opportunity to review changes and have governing bodies formulate comments or review the effects of the change(s). **(LCPC)**

The DEC agrees, edits have been made, and the time period for notification has been increased to 30 days.

72) We suggest that the procedure specify a period of 30 days for comment on applications in part (ii) and that such notice under this part for applications that affect owners of property other than the applicant's also be noticed to those owners at this time. This would place any input into the front end of the process. Then, we suggest that part (iii) be for all amendments. **(TRORC)** Affected property owners should receive direct notification. **(NRPC)** LCPC appreciates the ability for municipalities to request an amendment or revision to the river corridor maps. However, there is no notice requirement for property owners abutting or adjacent to the proposed change. As drafted, the Procedure only requires notice to be given to the local governing body, the Regional Planning Commission(s), and the Act 250 District Commissions. Further, the notice period is only 10 days. This effectively limits the opportunity for others to review the proposed change(s) and provide comment on the proposed change(s). **(LCPC)**

All updates and administrative revisions will be published for a 30-day public notice process with specific notice going to affected municipalities, RPCs, and District Commissions. Updates will not be sent to specific landowners. Updates are technical changes related to river sensitivity made to direct the Agency's decisions under the Flood Hazard Area & River Corridor Rule and in making (at its own discretion) the floodway determinations for Act 250 Criterion 1(D). Administrative revisions will be made as a part of the municipal planning process and it will be at the discretion of local governing body to decide how these changes are noticed to affected parties in their town before requesting the revisions to the Statewide Map.

73) "Requesting, Making, and Noticing Amendments," states that ANR may amend the "base layer," and municipalities or other parties may request amendments to the "statewide river corridor layer," suggesting that these are different things; however, Section 9.0 "Definitions" appears to define the two as one and the same. **(NVDA)**

These Sections have been substantially revised to clarify the definitions and distinctions between the GIS generated Base Map and the Statewide River Corridor Map Layer which reflects updates or administrative revisions made to the Base Map (as petitioned by any party).

74) "DEC River Scientists may make and document amendments as they deem warranted…" This seems to give authority to make amendments to maps without notice or input by anyone affected. This could be problematic especially in regards to maps that may have been adopted locally as a regulatory tool. **(NRPC)**

This has been changed to reflect that minor updates made by the river scientists would be made on the Statewide River Corridor Map Layer and affected municipalities and RPCs would be notified, whereas major amendments and administrative revisions would be put on notice for a 30-day period before being incorporated into the Statewide River Corridor Map Layer.

5(c)(4) Assisting Municipalities with River Corridor Planning

75) While it was clear from the webinar that Towns are not required to adopt these Plans 24 VSA §4382(a)(12)(A)(i) describes the flood resiliency requirement in the Town Plans. It reads: "A flood resilience plan that (i) identifies flood hazard and fluvial erosion hazard areas, based on river corridor maps provided by the Secretary of Natural Resources pursuant to 10 VSA §1248(a) or maps recommended by the Secretary…" So, while there may be no requirement for the Towns to adopt these maps as regulations – they are required to incorporate the data from them into their Municipal Plans? If the map is always going to be in flux, how should the municipalities include these maps in their Plans? **(CCRPC)**

ANR encourages towns to reference the best available data in their resiliency elements. For the stream/river reaches in the municipality the plan may reference one or a combination of the following:

a. The "State River Corridor Map Layer" as posted on the ANR Natural Resource Atlas which will always reflect the posted updates and administrative revisions* (w/ effective dates) for which the towns/RPCs will receive prior notice before updates are posted.
b. The most up-to-date river corridor protection area map, as requested by the municipality. ANR will update river corridor protection areas when the river corridor is updated and send the municipality the updated river corridor protection area.
c. A municipally-adopted Fluvial Erosion Hazard (FEH) map (which is essentially the river corridor protection area based on Phase 2 data).
d. A Phase 2 derived river corridor protection area or FEH that has not yet been adopted by a municipality.

* To avoid confusion with FEMA mapping language the draft Procedure has been revised to explain the processes for making (technical) "updates" and "administrative revisions" to the river corridor maps, instead of river corridor map "amendments" and "revisions."

76) In relation to that (see above), we have a decent amount of Phase II FEH data in Chittenden County, and it sounds like this is not included in the River Corridor Base Map. For municipalities where this data exists, why should their flood hazard and fluvial erosion hazard areas in the Town Plans be identified based on the River Corridor maps when the data isn't as good as the Phase II FEH data? Should we be preparing to file official LOMAs to ensure that the best data available is used to establish the river corridors in the areas where we have the Phase II FEH data? **(CCRPC)**

LOMAs are specific to the FEMA inundation maps and have a different legal connotation due to mandatory flood insurance/NFIP regulatory requirements and do not result in a change to hazard area delineations. ANR will not be implementing a LOMA process for the river corridor map since the map and related requirements are vastly different. To avoid confusion with the FEMA LOMA process, we have revised the procedure to use the term map "update."

Requests to update the Statewide River Corridor Map Layer will not be necessary since towns may reference the best available data (c & d in the response to Comment #75, if available) and the Statewide River Corridor Map Layer (as a backdrop) for those streams where no Phase 2 data is available. ANR plans to work with the RPCs to develop a schedule for incorporating, as rapidly as possible, the detail of Phase 2 data into the Statewide River Corridor Map Layer. The Program is already seeking additional funding to start this process. In the future the Statewide River Corridor Map Layer will represent the best available data for all streams. If a town has already adopted an FEH map (listed as c above) and wishes to take no further action to keep it updated with new data – the town is free to do so. Alternatively, if the town adopted an FEH map, and then the Statewide River Corridor Map Layer gets updated with Phase 2 data, the town could elect to reference either the Statewide River Corridor Map Layer or the river corridor protection area derived and maintained from the Statewide River Corridor Map Layer (a & b above).

77) Should a municipality request a River Corridor Protection Map only if it has, or is considering, zoning regulations which will protect River Corridors? Does the River Corridor Protection map have any other uses? **(Putney)**

The ANR will present the Statewide River Corridor Map Layer for consideration during the local zoning regulation development process. Program staff will explain the availability of River Corridor Protection Area maps (meander belt only, no 50 foot buffer) and bring those to "the table" to support municipal planning, if requested. In addition to land use regulations, ANR uses river corridor maps to support conservation projects through its River Corridor Easement Program and to inform river and floodplain restoration projects and encourages its partners to do the same.

78) "River Corridor Maps" (1) "Adoption" indicates under (D) (page 15) that "Municipalities may adopt the most current Statewide River Corridor Map into local zoning bylaws or as standalone bylaws." Does this mean that a municipality does not have the discretion to adopt local regulations that establish a regulated area that is based on the State River Corridor map, but that places different restrictions on different portions of the River Corridor? **(NVDA)**

We have deleted sub-paragraph 5(c)(1)(d). DEC's intent was to express that municipalities have options with respect to river corridor map adoption. The purpose of the Procedure is to lay out how DEC conducts its work around the mapping, protection, and conservation of flood hazard areas and river corridors and does not dictate what municipalities must do.

79) "Municipalities may adopt the most current Statewide River Corridor Map into local zoning bylaws or as standalone bylaws." (It) needs to be clear that the municipality has the option to not adopt the Map at all. **(NRPC)**

The DEC added language to make this point clearer in the Procedure.

80) "Municipalities may adopt the most current Statewide River Corridor Map into local zoning bylaws or as stand-alone laws." Does the municipality have to do one or the other? Also, should a municipality request a River Corridor Protection Map only if it has, or is considering, zoning regulations which will protect River Corridors? Does the River Corridor Protection map have any other uses? **(Putney)**

No, municipalities are not required or obligated to adopt river corridor bylaws or maps. Language has been added to the Procedure to make this clear. State statute requires ANR to promote and incentivize river corridor protection, but does not require municipal action.

81) The "Preview of Transmittal" (issued November 3) while attempting to allay concerns about map making and when they will have regulatory effect further confuses the question of when and if a Town must have a duly adopted model language and regulatory River Corridor map to request a revision to the map. This question takes on more importance when the scope of this project is accounted for. **(Brattleboro)**

The Procedure has been revised to stress that towns do not need to have a duly adopted map to request map updates or administrative revisions.

82) On Page 15, Section 5.0(c)(2) "Agency Process for Map Revision" outlines the process by which ANR may revise the Statewide River Corridor to "…incorporate Phase 2 stream geomorphic data and new local field studies…" and requires a 30-day notice and comment period. It is not clear whether the 30 day notice and comment period also applies to subsection (3) "Municipal Process to Request Map Revision." On page 16, subsection (C) under the above-referenced section indicates that if the requested *revision* is for an "isolated river segment" the DEC "may require the request to be submitted as a map *amendment*." It would be helpful to provide a footnote here with an example of when a revision becomes an amendment. **(NVDA)**

The municipal planning section, now in subsection (4), has been modified and refers to the public notice process in subsection (3). The term "revision" is being used to capture administrative changes related to the corridor and existing developments. The term "update" is being used to describe changes made to incorporate new geomorphic data redefining natural constraints and river sensitivity.

83) Will the process outlined result in revisions that will only apply to a local map, leaving the State River Corridor to still contain an accurate delineation of potential fluvial erosion hazard; or will the approved local modification results in a change to the State map? While Act 250 review should respect the local modifications, provided they had been approved by ANR, changes to the State map may give the false impression that an area is outside of an identified fluvial erosion hazard area. For Towns without local zoning or a flood hazard ordinance, it looks like the exceptions contained in Section 7.0 (a)(2)(B) (on page 20) should make altering the mapped boundaries of the State River Corridor unnecessary when the Procedure is applied during State-level review (Act 250, etc.). **(NVDA)**

The language in this section has been modified to clarify the relationship between municipal and state river corridor mapping. The Statewide River Corridor Map Layer will only be revised or amended to reflect local revisions where they are consistent with the Procedure. This comment also correctly states that the No Adverse Impact exceptions section largely makes a priori map adjustments unnecessary when it comes to project reviews. The value of having the map updated before project reviews, particularly with respect to designated centers, is that it gives the developer the advantage of having the best available data before investments are made in project design.

84) It seems bizarre that a municipality would have to adopt a river corridor map that it believes to be in error in order for it to request administrative revisions to correct it. **(TRORC)** Section 5.0(c)(3)(A) suggests that a municipality would need to adopt river corridor bylaws first, before seeking modifications to the river corridor protection area map. That is counter-intuitive. There should be a process that allows for a community to modify the river corridor map before local adoption. **(SWCRPC)** Re: Municipal Process- thank you for modifying this section to allow for modifications prior to adopting local regulations. **(NRPC)**

This Section was completely rewritten to address this valid point. The Agency will work concurrently to achieve consistency between local and state maps and make the updates and administrative revisions to the Statewide River Corridor Map Layer that are consistent with the Procedure prior to the local adoption process.

85) When a municipality submits for a map revision, who submits for the municipality? Should it be the Chief Executive Officer, Legislative Body, or Planning Commission? **(NRPC)**

The Procedure has been modified to indicate that the municipal legislative body should make the request to DEC for administrative revisions.

86) A municipality should be able to request an administrative revision regardless of the status of River Corridor Overlay as it applies to the municipality. Membership of the 'program' should not be a pre-requisite for the right to comment on the accuracy or force of the map(s). **(Brattleboro)**

The DEC agrees and has made changes to the Procedure to reflect this municipal revision capability.

87) While there is some logic to allowing a thinning of the river corridor in designated centers in trade for restrictions elsewhere that help alleviate confining rivers or creating flood prone development, the designated centers already exist and will be protected, and are usually alongside very hardened channels. It therefore seems that this de facto change in the river corridor should simply be acknowledged on the map regardless of local regulations. **(TRORC)**

The DEC agrees that the NAI exceptions in the Procedure largely make this language obsolete; however it is another a-priori heads up to a developer using the river corridor maps at the onset of planning their project. The adjustment of river corridors through centers may happen as administrative revisions during a town planning process which provides an important opportunity to review existing or desired center designations in light of fluvial erosion hazards.

88) Regarding ANR's review of municipal requests for map revision, what is the "higher" standard that the municipality must adopt if it is to make an amendment to the river corridor map, and to what lands does that standard apply? If, for example, it's a standard that effectively prohibits all new development from the flood hazard area, this seems to conflict with the last part of this paragraph, which suggests that river corridors don't have to be regulated at all in the designated centers. Also, regarding limited "*growth center* location in light of known repetitive loss areas" – is this term used generically (i.e. growth potential) or is it specifically referring to a growth center? If it's generic, how is "limited" determined; by lower densities, for example? Will there be a standard process for determining this? **(NVDA)** What are the higher standards referenced here? How does DEC propose to support (legally, technically) communities adopting higher standards? **(Brattleboro)**

The DEC has deleted this higher standard language.

89) Is "within a designated center" referring only to the state designations/programs or could town's element areas count as defined in a Town Plan? **(NRPC)**

The term designated center as defined in the Procedure denotes those areas designated pursuant to 24 V.S.A. Chapter 76A. The Department will consider municipally sought administrative revisions to account for existing infrastructure and areas of concentrated development with the caveat that corridors should not be constricted in highly erosive or repetitive damage areas.

90) I think it should be stated that worse-case scenarios for amendments should be considered. For example, if one argues for a narrower corridor due to a constriction at a bridge or existing riprap, it could result in people moving into harm's way in the future. The assumption should be made that the bridge could wash out or be widened, and the riprap could be washed away. **(Milone and MacBroom)**

In the Municipal Planning Section, DEC provides a couple of tests for limiting corridor constrictions in light of repetitive loss areas or the sensitivity/active stream adjustment process.

6.0 ACT 250/SECTION 248 FLOODWAY DETERMINATIONS

91) As suggested earlier and, in fact, used here somewhat, we suggest the term "Act 250 floodway" be consistently used to distinguish it from the NFIP floodway, at least until a better term is enabled. **(TRORC)** The differing definitions of floodway are confusing. It is odd to have the Act 250 floodway be defined differently than the regulatory floodway per the FIRM. It would be much clearer if river corridor protection areas were added as a third subsection under 10 V.S.A. §6086(a)(1)(D), and kept separate and distinct in these Procedures. **(SWCRPC)** Employ a different term to 'floodway' a so-called Act 250 Floodway is confusing. Any risk of confusion with NFIP Floodway should be avoided. Also, the terms appear to be applied inconsistently in the document. **(Brattleboro)**

DEC made the changes, where appropriate, to reference "Act 250 floodway." In some cases there is discussion explicit to the FEMA-designated floodway or reference to floodway analysis in the context of hydraulic modeling - in those instances, the term was not modified. Also, see the response to Comment #18.

92) In most cases, isn't the meander belt going to be further laterally from the FEMA-defined floodway unless the channel is really constrained and incised? And, if it's pretty clear that the river corridor will be used as the floodway in the Act 250 process because it is further from the channel laterally, why is it still necessary for the applicant to develop data such as floodway limits and base flood elevations? What if the development is in the river corridor, but NOT the floodplain? Do they still have to develop data, or is this subject to the discretion of the Secretary? **(NVDA)**

Whether the river corridor is wider or narrower than the FEMA-designated floodway depends on a number of variables. For lower gradient rivers with good floodplain access, the FEMA-designated floodway is typically wider than the river corridor. If a river is incised or high gradient, the floodway is typically narrower than the river corridor. For Act 250 floodway determinations, the river corridor and the FEMA mapped flood hazard area are considered for erosion and inundation hazards, respectively.

It may or may not be necessary for the applicant to develop floodway and base flood elevation data depending on context. In cases where the river corridor is wider than the FEMA-mapped flood hazard area, the river corridor may be more restrictive (i.e. prohibit the encroachment) and thus negate the need to develop floodway and base flood elevation data. On the other hand the proposal may meet the exceptions to the river corridor standard, such as infill or redevelopment in designated centers, but still need to meet the inundation requirements.

If the project is within the FEMA-mapped flood hazard area, then inundation standards apply irrespective of whether or not the proposal is within the river corridor. If the project is located in the FEMA-mapped flood hazard area, where base flood elevations and floodways have not been published, floodway limits and base flood elevations need to be developed to inform which inundation standards apply to the proposal.

If the development is in the river corridor but not in the FEMA-mapped flood hazard area then the developer may not need to develop base flood elevations, but this is at the discretion of the Secretary. If the project is outside of the FEMA-mapped flood hazard area, then development of data *may* be required if documented flood damages or flood history exist indicating the risk of inundation hazards outside of the river corridor.

93) If a municipality has enacted flood hazard regulations that do NOT include River Corridors, will the DEC will still want to see applications for building permits within the State River Corridor and recommend them as "no build, no fill" zones? **(NVDA)**

No, if local flood hazard regulations do not include river corridors there is no obligation to submit the project to DEC for review if it is not in the SFHA as adopted by the town. This section has been modified to try and make that clear.

7.0 DEC REGULATORY RECOMMENDATIONS

7(a)(1) Review of Act 250/Section 248 Projects with No Adverse Impact Standard

94) We fully support the use of the NAI standard. However, we have concerns about any new structural development in a NFIP floodway under 7.0 (a)(1)(B) as this area has terrific flood force. In fact, to convey this concept to the general public we routinely refer to the NFIP floodway as the "death zone." **(TRORC)**

DEC agrees that the FEMA-designated floodway should be viewed as a *no new development* area given high flood depths and velocities in this zone. The language *"development shall not occur"* largely prohibits new development within the FEMA-designated floodway. There are options in the Procedure to conduct a hydraulic "no-rise" analysis or seek a floodway revision through FEMA for proposals to encroach or further encroach within the FEMA-designated floodway. There are numerous pre-existing investments and uses in FEMA-designated floodways and sometimes there is no practicable alternative to relocating the investment (e.g. – wastewater treatment plants). In addition, some investments, by necessity, must be located in floodways, such as stream crossing structures and public accesses to water, etc. The standard to not increase elevations and velocities is a very high standard to meet and generally results in very little new development encroaching in floodways.

95) Where would the compensatory storage be? Since flood levels can vary across the floodplain in flood, it may not work to provide storage far from the fill without increasing local risks. (It) seems risky and difficult to prove benefits in practice without detailed (2D) modeling. **(Milone and MacBroom)**

The volumetric analysis standard and analysis is modeled after the Massachusetts Wetland Rules which regulate floodplains as well. This approach has been used for over two decades and was designed to be administered by local conservation commissions.

You are correct that hydrologic and hydraulic modeling to analyze impacts on floodwater storage and conveyance is expensive, time consuming, and requires a high level of expertise. The compensatory storage volumetric standard is a lower cost alternative and reasonable proxy to meet the No Adverse Impact standard in the flood fringe.

The compensatory storage has to be provided at a hydraulically equivalent site and thus typically requires the ability to offset the fill immediately adjacent to proposed fill location. ANR will develop guidance material on how to conduct a compensatory storage volumetric analysis. In the interim, further discussion may be found in Chapter 9 of the following handbook: http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/hydrol.pdf

7(a)(2) Exceptions to No Adverse Impact Standard

96) "Exceptions to the No Adverse Impact compensatory storage requirement within the flood fringe" (page 20): Wouldn't replacement of many structures still require at least minimal compliance with FEMA standards since they're going to be "substantially improved" in a sense? **(NVDA)**

This is correct – this exception has to do with the compensatory storage requirement only with respect to not having an adverse impact. Section 7(a)(3) Floodplain Management Standards leads off with the following sentence:

> *If the No Adverse Impact standard has been met, Agency technical staff shall, consistent with the requirements of 44 C.F.R. § 60.3, recommend that development be made rea-*

sonably safe from flooding and comply with all applicable floodplain management criteria of the NFIP.

97) There is a high prevalence of existing brownfield contamination sites within floodway, floodway fringe and/or river corridor areas. There should be consideration of a clear exemption to Sections 7.0(a)(1) (A) and (C) in order to facilitate brownfield site cleanup, which often requires installing a cap in the form of clean fill or pavement on top of the existing contaminated soil. If no fill is allowed under these Procedures and model bylaw/standards, the cost of cleanup will be very expensive. **(SWCRPC)**

This Procedure does not preclude the clean-up of brownfield sites. It is extremely important to remediate these areas, but it can be accomplished in a way that does not cause an adverse impact with respect to flood hazards. Exceptions cannot be provided in the FEMA-designated floodway for NFIP compliance reasons. In the flood fringe, remediation may be accomplished by removing a portion of the contaminated material at the surface to ensure the clean fill cap does not change ground elevations or minimally raises ground elevations. Section 7(a)(2)(A)(i) provides an exception for projects that have a minimal effect on floodwater storage. In our experience, most remediation projects can be designed to accomplish multiple objectives without unreasonably driving the costs up. Brownfield clean-up projects subject to Act 250 Criterion 1(D) should budget accordingly as projects cannot restrict or divert floodwaters.

98) We suggest deleting part ii and using a variance-like test in part iii, where the applicant would have to find the most compliant placement on the lot for the replacement structure. We also suggest this same approach under 7.0 (a)(2)(B)iii. A diagram would help to illustrate this concept. There are some diagrams in the appendices, but these are rudimentary and not very clear and there is no reference to them. **(TRORC)**

These are exceptions to the No Adverse Impact compensatory storage requirement. Section 7(a)(2)(A)(ii) is an exception for replacement structures of the same size since they will not reduce flood storage capacity over and above the existing structure. The intent is to not require, by way of the exception, that replacement buildings be pulled further away from the river. DEC routinely recommends consideration of alternative safer sites to Act 250 District Commissions and project applicants. It is important to keep in mind that the regulatory standard with respect to Act 250 Criterion 1(D) is whether the proposal will restrict or divert floodwaters and endanger public safety. The compensatory storage standard is structured to ensure that proposal will meet that standard.

The diagrams in the appendices provide examples of how to meet the River Corridor Performance Standard. Examples of how to meet the No Adverse Impact compensatory storage standard will be developed.

99) (The River Corridor NAI exception dealing with improvements) outside of a state designated center, for the replacement of improvements is not intended to prevent existing unfinished space from being finished and other similar scenarios provided there is no increase in size fac-

ing the river. The structure may be enlarged in order to meet necessary life safety improvements. **(LCPC)**

This comment summarizing the intent of the exception dealing with replacements outside of designated centers is largely accurate. Replacements within the footprint of the existing structure would meet the exceptions and Appendix B explains the locations of additions and accessory structures that would meet the River Corridor Performance Standard.

100) The Procedures should make public recreational facilities (e.g. parks, water access, bike path, playing fields) an explicitly allowable exception to the no adverse impact requirement within river corridors, as long as such facilities follow best management practices to minimize adverse impacts and take reasonable measures to limit exposure to future damages. While the goal of no new encroachments in the river corridor makes good scientific sense, the applicable Rules and Procedures should also allow for recreational uses that are in the public's best interest in addition to providing water quality benefits and mitigating against flood and fluvial erosion hazards. **(SWCRPC)**

The NAI for river corridors reads "Except as provided in Section 7(a)(2), projects shall not include new fill, new structures, substantial excavations, and other improvements within the river corridor." The definitions for structure, accessory structure, and improvements would not preclude many types of minor or "unimproved" river access amenities and open space uses. Other more structural recreational improvements in the vicinity of villages or other existing improvements would likely meet the exception that applies the River Corridor Performance Standard. If a recreational improvement or structure is proposed under Act 250 away from other development then it probably would not meet the River Corridor Performance Standard and the Department would recommend that the proposed improvements be either downscaled or moved out of the river corridor. Projects subject to Act 250 Criterion 1(D) cannot restrict or divert floodwaters, whether recreational or otherwise. When large new investments are made in the river corridor there will be a need in the future to channelize or further channelize the river to protect the investment from the lateral movement of the river, creating new hazards downstream.

101) The Procedure makes an exception for "improvements" in certain parts of a municipality that are within the river corridor. Development may be pushed to other areas that could promote sprawl, not where development is desired, and may be limited by use. **(LCPC)**

> *7.0(2)(B)(i): Redevelopment and infill development is allowed in state designated centers as long as the redevelopment does not move any closer to the river.*
> *7.0(2)(B)(iii): The replacement of improvements within the footprint of an existing improvement or immediately adjacent to an existing improvement of the same type and size that is being removed as a part of the redevelopment, provided that the replacement improvement is no closer to the river than the improvement of the same type that is being re-moved.*

It is unclear what is meant by the "same type" of improvement that can be made. For example, a lumberyard is located in a river corridor. If the lumberyard is sold, can it be another commer-

cial use (such as converted into a retail store or apartments) or must it always be a lumberyard? Or, does "type" refer to building material? **(LCPC)**

DEC has revised the text in this section to clarify this river corridor NAI exception.

102) Structures should be allowed to be enlarged or improved provided they do not move closer to the river, especially if the improvements or changes are necessary for life safety and building code upgrades. **(LCPC)**

The fourth exception in Section 7(2)(B)(iv) which includes the River Corridor Performance Standard expands on the exception outlined in 7(2)(B)(iii) with some side-boards on an enlargement.

103) This language is particularly confusing. Consider using language reflective of traditional zoning. See the below section for suggestions on how this could be clearer. **(LCPC)**

This section has been revised to try and make clear the exceptions to the No Adverse Impact Standard. There is a list of specific exceptions capped with a performance standard that provides some flexibility to look at each project in the context of fluvial erosion hazards.

104) The SWCRPC agrees that it is good to provide exceptions for redevelopment and infill development within state designated centers. However, there are many traditional village centers in Vermont that are not afforded the benefit of this provision. Please consider expanding this exception to also include traditional community centers that are not designated in order to further the State Planning Goal 24 V.S.A. §4302(c)(1). **(SWCRPC)**

The NAI Exceptions Section for river corridors has been revised to say "redevelopment and infill development in designated centers." Also, the exception in Section 7(a)(2)(B)(iv) which includes the River Corridor Performance Standard which is a catch all variance essentially stating that if you are in an already developed area (designated or not) and your Act 250 project will not by itself lead to channel management and the preclusion of stream equilibrium conditions then the Agency will not advise against placing the proposed improvement within the river corridor.

105) Area designations developed and implemented by the Agency of Commerce and Community Development (ACCD) pre-date the state's interest in 'resilience'. These are tightly mapped areas that typically reference built form and land use and may recognize historic land use patterns—which may or may not be in conflict with streams. For small communities these state designated areas may serve as an appropriate release from the added requirements of No Adverse Impact (NAI). In larger communities such as Brattleboro the designated areas are a tiny portion of the larger, developed watersheds. The definitions of the Neighborhood or Growth Centers designations make it difficult for Brattleboro to participate on the basis of topography alone. It is a matter of record that Brattleboro indeed has built environment—stream conflicts in designated areas. By relaxing the NAI requirement this procedure merely protects existing

poorly designed development(s) and encourages more unimaginative applications that don't reduce risk or improve amenity (Acknowledging that Act 250 and §248 development is limited in these areas). **(Brattleboro)**

The Procedure allows for a planning process at the local level to decide whether or not it makes sense to constrict the river corridor in a designated center through an administrative revision process. If during that process it is determined that the center designation did not rightly consider flood resiliency then the degree of mapped river corridor constriction may be limited. The Exceptions Section allows for redevelopment and infill development in designated centers where a project will not cause or contribute to fluvial erosion hazards (i.e., meets the River Corridor Performance Standard). The flip side of the notion that the State should not be encouraging development in poorly conceived centers, is that development may be pushed to undeveloped river corridors where there is the greatest opportunity for flood attenuation.

106) As it pertains to structures to be replaced or rebuilt from substantial damage, this section should consider requiring its relocation further away from the hazard area, as allowed on the existing site, in order to minimize the risk of the investment. **(SWCRPC)**

DEC agrees from a policy standpoint that requiring relocation where practicable will help mitigate our flood vulnerability over time. To make this a requirement in Act 250 would require a change in statute. The No Adverse Impact exception has to do with a replacement structure meeting the Act 250 Criterion 1(D) standard by not restricting or diverting floodwaters and endangering public safety.

107) On Page 21 (iii) - Can anyone explain this? **(Richmond)** This is very difficult to understand and needs to be rewritten. **(Brattleboro)**

The DEC has modified the text in section 7(a)(2)(B)(iii) to be less wordy. The overarching objective is to ensure that replacement structures meet the River Corridor Performance Standard and are not located in an area of the river corridor that will increase the need to channelize the river.

7(a)(3) Floodplain Management Standards

108) If DEC will recommend to towns and in state proceedings the use of 2 feet of freeboard as a standard, why not simply place this in statute as the minimum regulatory standard? **(TRORC)** It is not clear why the DEC cannot simply require 2ft of freeboard (unless there is a conflict with FEMA)? **(Brattleboro)**

The recently adopted Flood Hazard Area & River Corridor Rule covering activities exempt from municipal regulation requires two feet of freeboard. Act 138 (2012) gave ANR the authority to adopt standards that exceed the NFIP for the above-referenced Rule. To make two feet of freeboard a minimum state standard that would be required in municipal regulations and Act 250 proceedings requires a legislative change to 24 V.S.A. § 4424 and 10 V.S.A. § 6086(a)(1)(D),

respectively. ANR's recommendations to Act 250 will be consistent with the standard in the above Rule and the Program's model municipal flood hazard bylaws will be updated accordingly.

To be clear, this section articulates recommendations to Act 250, not agency comments on municipal permits. The reference in this section to municipal standards is to ensure that Act 250 permits adhere to higher local standards. Section 7(b) discusses DEC review of municipal permits; the text in the section has been updated to provide clarification.

109) To be consistent, we would recommend a 2-foot freeboard standard for waterproofing. **(TRORC)**

The freeboard standard is explicitly tied to a structure's lowest floor elevation in relation to the base (1% annual chance) flood elevation. This section is referring generally to the structure's mechanical, electrical, and plumbing systems under conditions of flooding.

110) We do not agree with the proposal for requiring two feet of freeboard above the base flood elevation for development. Freeboard is great to encourage (especially for flood insurance purposes), but to require two feet of it is asking too much. **(Morristown)**

This is a recommendation DEC will make to District Commissions and not an absolute requirement per se. District Commissions have the discretion to require something less or more. The *requirement* for Act 250 Criterion 1(D) proposals is for development to not restrict or divert floodwaters and endanger public safety.

Generally speaking, elevating an additional two feet above the base flood elevation increases costs marginally relative to the overall cost of the project. According to the Association of State Floodplain Managers, the additional costs of elevation are typically recouped in 10 years in the form of reduced flood insurance premiums and reduced flood losses. Given the recent flood insurance reforms and the likelihood of increased flood elevations due to increased flood frequency and magnitudes brought on by climate change, ANR believes the two foot freeboard standard is appropriate and reasonable.

The Flood Hazard Area & River Corridor Rule for "development exempt from municipal regulation" requires a two foot freeboard standard. It is appropriate that recommendations to Act 250 be consistent with the Rule.

111) Critical facilities should not fail during floods, and many should be accessible during floods. While this standard is good if they have to be located in floodplains, they should be located outside of floodplains when possible. **(TRORC)**

The DEC agrees that siting critical facilities outside of floodplains offers the best opportunity to avoid loss of critical services during flood events. We consistently recommend to District Commissions that applicants demonstrate that there is no alternative to siting a critical facility in a

floodplain. Most critical facilities reviewed under Act 250 involve modifications to existing structures. An absolute prohibition is not practical given pre-existing land uses and site constraints. We have added a footnote to the Procedure indicating that we recommend location outside of flood hazard areas if possible.

112) We do not agree that "critical facilities" need to be outside of Zone X – the 500 year floodplain. This is again asking too much, especially given that amount of existing downtown infrastructure in the county in Zone X. As an example, I know from practicing planning down in Mass. that a huge chunk of metro Boston is in Zone X. Saying that no critical facilities could be allowed there would leave entire towns without such facilities. **(Morristown)**

The Procedure does not say that critical facilities need to be outside of Zone X (i.e. 500-year floodplain) or prohibit them outright in the flood hazard area or Zone X. ANR recommends locating them outside of these areas if possible. The Procedure says that ANR will recommend that critical facilities *have the lowest floor elevated or floodproofed to at least the 500-year flood elevation or two feet above the base flood elevation, whichever is greater.* The following document explains the importance of protecting critical facilities to a higher standard: http://www.floods.org/ace-files/documentlibrary/Whitepapers/ASFPM_Critical_Facilties_and_Flood_Risk_Final_Feb_2011.pdf

7(b) Review of Projects Subject to Municipal Regulation

113) In the case where the DEC is making recommendations to a municipality per 24 V.S.A. §4424(a)(2)(D), those recommendations should be based upon the municipal bylaws in effect at the time an application is submitted. **(SWCRPC)**

The DEC has made changes to the Procedure in agreement with this point.

114) We do not like the language that makes it the Town's responsibility to provide DEC with applicant permit applications under this proposed language. This is not the town's development and this is not the town's permit. The applicant should be required to submit his/her permit to the state. The towns should not be left to staff the role as middleman. We should be able to designate that the applicant does this. **(Morristown)**

This is in reference to development subject to municipal regulation. The text clearly states that this is in relation to "projects subject to municipal flood hazard area regulations." The long-standing mandatory provision in statute is for the municipality to submit the permit application (24 V.S.A. § 4424(a)(2)(D)(i)) to the State. Since the municipality is the permitting authority and ultimately responsible for enforcement of its adopted flood hazard bylaw, it is important to get DEC's recommendations directly to be informed about permit deficiencies and be advised on what conditions should attach to the permit. DEC comments and recommendations on municipal flood hazard area permits are advisory and intended to help a community enforce its

adopted flood hazard bylaw and remain in good standing with the National Flood Insurance Program.

115) It is inappropriate and potentially legally dangerous to suggest to towns that they regulate beyond the standards that they have in place at the time of permit review. If the Agency sees places during permit review where public safety could be increased, then recommending changes to the current *bylaw* would be more appropriate. **(TRORC)** It is inappropriate to encourage towns to regulate *beyond* the limits of their own regulations. Where the Agency can identify shortcomings in municipal regulations it would be advisable to recommend bylaw amendment(s). **(Brattleboro)**

The DEC agrees with these comments and made the recommended change to the Procedure.

7(b)(4) Regulatory and Technical Assistance to Other Agencies

116) What are the "other programs" alluded to here? Can they simply be listed? Does this section mean that the agency will only provide technical assistance and regulatory recommendations if a program meets the two-part test underneath? Does this section imply that the agency will actively seek the rules or regulations of these other programs to review? **(TRORC)**

DEC has simplified the language to avoid the implication that other Programs will regulate flood hazard areas and river corridors and made a general statement that DEC will give regulatory assistance to non-municipal programs in a manner consistent with the Procedure.

117) What are the other programs? Why does the Agency condition provision of technical assistance on its two-part test. Why don't all programs have mutually reinforcing goals (with some easily identified known exceptions)? **(Brattleboro)**

This Section has been clarified. The two-part test establishes an over-arching performance standard for compensatory storage and river corridor encroachment with the acknowledgement that there are other programs that have or may begin identifying floodplains and river corridors and will look toward the Program for technical assistance. The Program has limited resources to assist other non-municipal programs and will not spend resources supporting programs that do not at least meet these performance standards.

8.0 BEST MANAGEMENT PRACTICES IN FLOODPLAINS AND RIVER CORRIDORS

118) By using the NFIP framework of loosely referenced 'land use' planning (not much more than identifying mapped zones of hazard) and then providing extensive and somewhat subjective exemptions to the force of the rule (mostly other agencies main areas of operation—i.e. federal highways, physical infrastructure not easily moved, pre-existing land use planning designations) a lot of activity has been pushed into this section. The other obligations of DEC such as ecological function and aesthetics are hinted at in this section but alert the reader to the existence of

other permit requirements rather than a holistic management approach that designating a corridor might imply.

It is disappointing to see that rather than this section addressing the connections between ecology, flood protection and amenity it reads as an ill-defined mildly punitive warning to municipalities concerning the need for Town Plan flood resilience element and suite of regulatory measures meeting DEC expectations or risk being penalized when requesting technical assistance and state funding. The structure of this Procedure and the model language constrains municipalities because the path of most protection and support is provided by these tools. Regrettably the cumulative effect of these rules is to protect the status quo in developed areas—a demonstrated inadequate response. **(Brattleboro)**

This comment raises a very important point about ecological and water quality objectives implicit in river corridor protection. However, this Procedure is not a State Plan, nor is it intended to be a be-all/end-all reference document for holistic watershed management. The State Surface Water Management Strategy (SWMS) is a more holistic DEC plan for watershed management inclusive of addressing channel erosion and river corridor/floodplain encroachment. We have updated the BMP text to reference the State SWMS. The primary purpose of this Procedure is to articulate how ANR conducts its business in mapping and assisting the regulation of floodplains and river corridors. To be clear it is not a rule, but, as revised, DEC believes that the Procedure informs holistic, resiliency-based land use planning.

DEC will provide, within its capacity, technical assistance to any community that asks for it. Regarding incentives, both statute and rule require the State to provide incentives to communities taking steps to protect floodplains and river corridors.

Lastly, DEC is not trying to preserve the status quo through this Procedure. The primary goal is to protect and restore undeveloped river corridor and floodplain assets. Among a myriad of benefits, undeveloped river corridors and floodplains provide storage of floodwater, sediment, and debris, and if protected can reduce damages in the built environment.

The exceptions made for designated centers is to acknowledge the broader state goal of supporting a working landscape and focusing development in existing compact town centers to reduce sprawl. The regulatory standards that will apply to infill and redevelopment will help ensure that new investments are flood resilient while at the same time not increasing the hazard to others. Municipalities are in no way constrained by this Procedure. The flood resilience element in town plans, as now required by Act 16 (2013), provides a wonderful opportunity for regional and municipal plans to establish and implement the holistic vision referred to above. The Flood Ready web site was created to assist with this planning effort and provide some of the broader planning tools referenced in this comment. DEC stands ready to assist any stakeholder wishing to embark on this effort.

119) Brattleboro has examples of new development located close to the Whetstone Brook because the developers could meet the non-residential floodproofing standards. This continues the

trend of placing our backs to rivers and streams. Maintaining the status quo misses opportunities to improve the watercourse and the banks and deal with river dynamics as they work in densely settled areas. **(Brattleboro)**

The No Adverse Impact Standard is not the status quo, particularly in those areas within the flood hazard area but outside the FEMA-designated floodway. Previously, if a structure was proposed next to an incised stream (like the Whetstone) where the floodway is narrower than it would be naturally, all it had to do was flood proof. Using the NAI standard there will be a new test of "no decrease in flood storage capacity." This higher standard, along with NAI in the river corridor, should help to avoid new or closer encroachments. Towns are also free to adopt even higher standards in urban areas if the objective is to regain flood attenuation.

120) In the first paragraph, the draft states that use of BMPs is in the best interest of the landowner, when that is not necessarily the case. In fact, it is the supposed common interest of the watershed towns and state that may be trumping individual gains. **(TRORC)** Use of the Best Management Practices (BMPs) is not *always* to the benefit of the applicant, the cost benefit analysis should not be drawn so tightly, because it will be inevitably challenged. For a Town to adopt BMPs successfully it will need the collaboration of DEC and other Agencies to demonstrate wider and longer term benefit. **(Brattleboro)**

The sentence in question has been modified to include the underlined phrase -- *Maximizing the use of these best management practices, with respect to stream and floodplain equilibrium, is in the interest of landowners, the communities of a watershed, and the State as a whole.*

To state that a set of practices is in the interest of the landowner does not imply that all interests are served. Undoubtedly, landowners who have other interests, particularly short-term economic interests that may conflict with the attainment of naturally stable streams on their property, will not feel constrained by this assertion. The Rivers Program works with Vermont landowners, year-after-year, finding instances where managing streams and floodplains to their least erosive, naturally stable form will be of benefit to them.

121) In the second paragraph the document states, "Local planning will affect the technical, regulatory, and funding assistance the State may provide for implementing local projects and practices." It is logically confusing to state that an action will affect what may be done. Also, "local planning" and "the technical, regulatory, and funding assistance the State may provide for implementing local projects and practices" are both broad. Does that mean that a town plan's flood resilience content affects getting a sidewalk grant? Is it a vague reference to the ERAF rule? Is it talking about mitigation plans and HMGP grants? **(TRORC)**

DEC has revised the text to clarify its statutory obligation to provide incentives for local planning and implementation of local projects and practices to address flood and fluvial erosion hazards.

122) This Section could benefit from best management practices for urban streams that detail design processes that respond to ecology, flood protection and amenity. It is not always the case that the river corridor as mapped will be available to the river in urban settings but the 'exception' approach simply accepts that private property and public infrastructure are in inevitable conflict. This perceived conflict can be attenuated and generate thoughtful design that brings the public into closer contact with streams and could encourage more support for protecting streams ecological function. **(Brattleboro)**

This comment contemplates a level of detailed planning that is well beyond the intent of this Procedure. The BMP Section references methods that are applicable in urban settings.

123) It would be helpful to also develop best management practices for the management of upland areas for flood attenuation per 24 V.S.A. §4382(a)(12). **(SWCRPC)**

The term "upland hydrology" was added to the stressor list in the BMP section dealing with slowing, spreading, and infiltrating runoff.

124) Offsite mitigation and flood control dams may not be in favor, but they may offer best options for certain situations where considerable development already exists and is at risk. **(TRORC)**

Flood control dams are described in the Procedure as a modifier of watershed hydrology that may decrease river sensitivity, but ANR does not advocate new flood control dams as a BMP at this time.

125) In the second sentence, the "may" should be changed to "are", and in the third sentence "and erosive power" should be added after "flood depths." **(TRORC)**

DEC has made the recommended changes.

126) Zoning can actually restrict channel straightening and armoring, since while work within waters is generally not regulated by towns, any work on the land can be. Also, Stream Alteration Permits are strangely omitted from this section, as they could definitely be used to avoid channel straightening and armoring. **(TRORC)**

The noted BMPs have been organized within the River and Riparian Management BMPs Section.

127) "Removal of Structures" (page 25): In the third paragraph, what is meant by the phrase "..there may be road setbacks that are worthy of consideration?" **(NVDA)**

DEC has added clarifying language to indicate roads both within and immediately abutting a meander belt.

128) It is not clear that removal of lower limbs and other actions that retain a canopy and undisturbed ground but allow better views of streams and a more aesthetic experience negatively affect the riparian protection values of a river buffer. Such actions can certainly improve the public's appreciation of rivers. We remain concerned that riparian buffers need to differentiate between rural and urban areas to take into account the other values that the public places on waterways. **(TRORC)**

DEC has added a paragraph in agreement that some vegetation management would still be consistent with the buffer functions sought to be protected in the BMPs of this Procedure.

9.0 DEFINITIONS

129) It would be helpful to include definitions of "channel slope" and "LOMR." **(NVDA)**

A channel slope definition has been added. Footnote 23 in the Procedure further defines a FEMA Letter of Map Revision or LOMR.

130) The term "flood fringe" is defined and used towards the end of the document, but the term "floodway fringe" is used in the beginning of the document. I believe the terms mean the same thing, but either one or the other should be used. **(NRPC)**

For the purposes of this procedure, the terms are synonymous. The term "floodway fringe" is defined in 10 V.S.A. § 6001 and is explicitly referenced in Criterion 1(D). Both terms and their use are defined in the Procedure and the text has been updated to make this clear.

131) Should the Critical facilities definition be amended to include facilities that serve vulnerable populations? **(NRPC)**

The definition is sufficiently broad to include facilities housing/serving vulnerable populations.

132) The definition of "improvement" only includes habitable structures, accessory structures, and public or utility investments. This excludes other structures that are commonly defined in local zoning (e.g. decks, gazebos, car ports, pavilions, swimming pools, etc.). The lack of specificity could lead to varying interpretations of the Procedure. **(LCPC)**

For the purposes of this Procedure and conformance with the NFIP, "structure" *means a walled and roofed building, as well as a manufactured home, including gas or liquid storage tanks*. This Procedure guides the work of DEC for regulatory work and is not a zoning document; as such there will be instances where terminology and syntax do not agree with traditional zoning bylaws. The term "accessory structure" is defined in a way that would include many of the other structures listed in this comment but ties the other structure as a use that is incidental, subordinate, but related to the primary structure.

133) Consider revising definitions to be consistent throughout the Procedure and expand definitions to include words like the "shadow" and "Flood Hazard Boundary Map". The definition of "improvement" is limiting to other structures not included in the provided definition; for example, it is unclear how recreation facilities such as pavilions or picnic tables, or other structures commonly regulated through municipal zoning such as signs and decks, would be regulated through this Procedure. It is unclear if recreation paths would be allowed to be replaced or added in river corridor areas. Agricultural and recreational uses are encouraged by FEMA as appropriate uses for floodplains and provide functional use of floodplains not appropriate for dwelling or commercial purposes. Many Lamoille County communities utilize rivers for recreation and economic benefit and those uses should be allowed to continue. **(LCPC)**

The DEC reiterated that these Procedures are applied primarily in Act 250 project reviews and many riverside park facilities would not be reviewed under Act 250. If an Act 250 project includes recreational facilities they would be reviewed under the same "No Adverse Impact" standard (and exceptions) as other development and improvements. Increasing fluvial erosion hazards by channelizing a river to protect a picnic pavilion has the same effect as channelizing a river to protect a house or road. Certain recreational amenities like picnic tables and unimproved recreation paths would not fall under the definitions of new fill, new structures, substantial excavations, and other improvements within the river corridor. Agricultural structures are exempt from municipal regulation and are therefore regulated by the Flood Hazard Area & River Corridor Rule NOT this Procedure.

APPENDICES A AND B

134) These were very confusing to interpret. It appears from the webinar comments that municipalities are not expected to implement this method, so perhaps as long as they are understood internally within ANR it is fine. If part of the purpose of these procedures is to prevent the further loss of life or the addition of new vulnerable structures within a river corridor it seems counter-intuitive to allow new structures to be created as infill- unless they are within an area planned/designated for growth. **(NRPC)**

We understand that interpreting these examples may be difficult in the abstract. For towns that choose to adopt river corridor bylaws, ANR will be able to provide technical assistance in applying the examples or how projects, not clearly meeting the examples in the appendices, can meet the River Corridor Performance Standard. In addition, DEC will provide training to stakeholders interested applying the examples to real world situations.